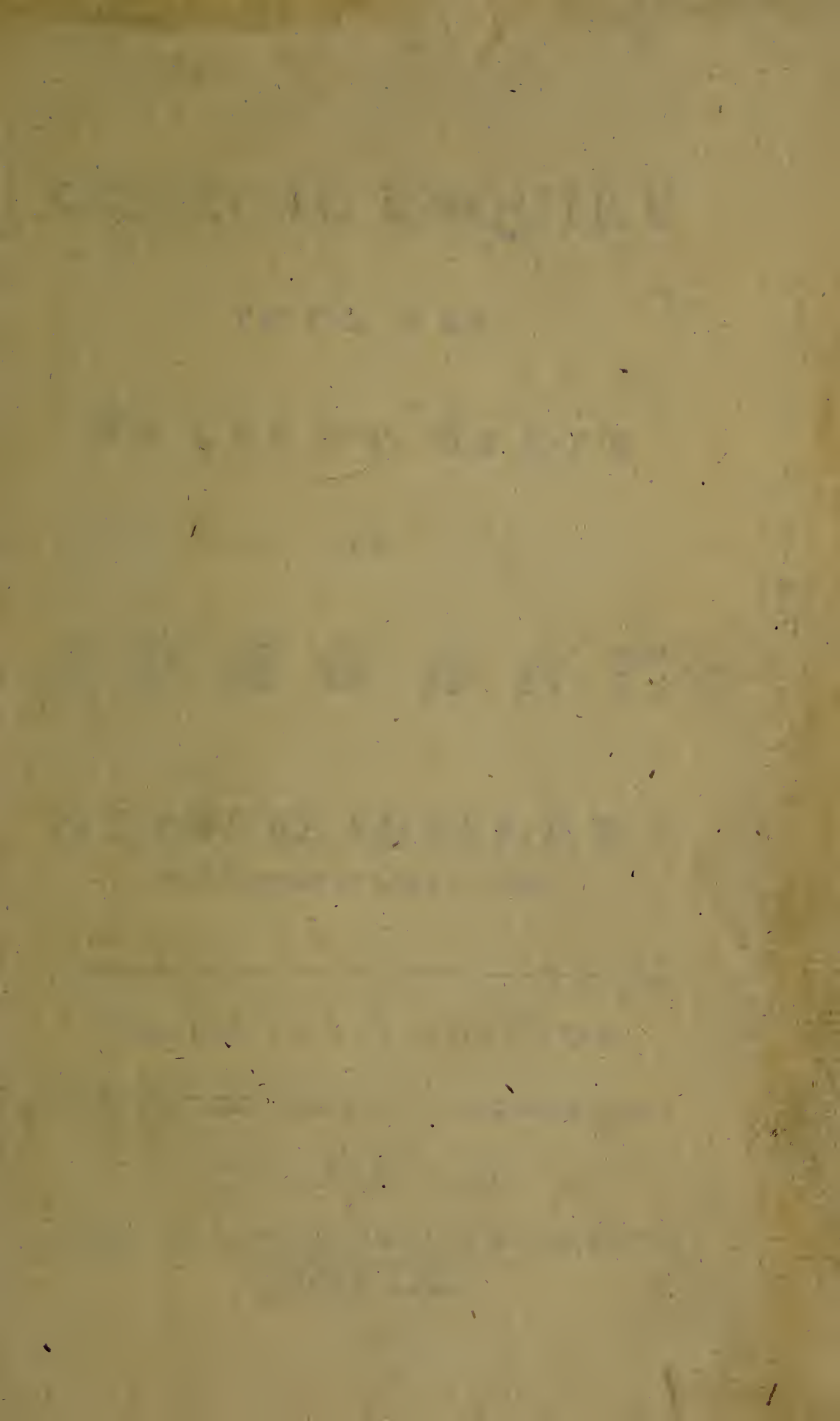


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A
CRITICAL ENQUIRY
INTO THE
PRESENT STATE
OF
SURGERY.

By *SAMUEL SHARP*, F. R. S.
And Surgeon to *Guy's* Hospital.

THE FOURTH EDITION.

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P R E F A C E.

FROM the Title I have given to the following Sheets, it may possibly be expected that I should have passed some Judgment on every Branch of Surgery; but as the greater Part of that Work would have been a mere Repetition of what is to be found in the most approved Writers, I have only considered either such Doctrines, which, though generally received, are in my Opinion ill-grounded, or such Improvements as are yet but little known.

The Treatment of Tumors, Wounds, Abscesses and Ulcers, seems to be fundamentally

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damentally the same in every Country of Europe ; for if the topical Remedies made use of on these Occasions are different, their Tendency and Effect are the same. I think too, that all eminent Surgeons are agreed on the Method of treating Luxations and Fractures, for which reason I have not made any Observations on these Articles.

Perhaps there never was a Period of Time in which any Art was more cultivated than Surgery has been for these last thirty Years, and I believe few have more contributed to its Perfection than the Authors to whose Works I have referred in some of the following Criticisms ; and therefore if I am right in my Remarks, I would not have it imagined that the Errors I have pointed out, are Specimens of the other Parts of their Works.

Monsieur

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Monsieur Le Dran, (to whose Labours the World is exceedingly indebted) hath in his Observations of Surgery, and his Treatise of Operations, furnished us with Instructions which will inform the most skilful Proficients. Monsieur de la Faye, the ingenious Commentator on Dionis, has likewise given us in his Notes, not only what his own Experience and Reflections have suggested, but also, as he says, the Opinions and Observations of the greatest Surgeons of Paris; and indeed the frequent mention he makes of Messieurs Morand, Petit, de la Peyronie, and others, are sufficient Proofs that his Comments are an exact Representation of the present State of Surgery in France. Monsieur Garengot's Treatise on the Operations of Surgery, lies under the disadvantage of having been published some Years since, and before many of those Improvements were made, which are

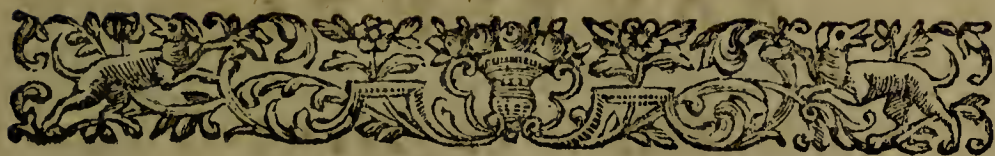
now

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now universally known : Nevertheless it contains several Cases and Remarks well worth the Attention of a studious Reader. Heister's Surgery is in every Body's Hands, and the Character of Heister is so well established in England, that any Account of that Work is needless.

These are the principal Authors amongst the Moderns who have wrote on Operations in general ; but notwithstanding the Merit of their Performances, it is to be hoped, there is still room for farther Improvements ; and I shall esteem it my greatest Happiness, should it appear that in this Enquiry I have done any thing which may tend to promote an Art, in the advancement of which, the Good of Mankind is so nearly concerned.

C O N-



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A

CRITICAL ENQUIRY, &c.

CHAP. I.

Of HERNIAS.

 **T**HE several Kinds of *Hernias* formed by the Protrusion of the Intestines and *Omentum* from the *Abdomen*, are named either from the Parts through which they fall, or the Parts contained in the *Hernia*; and is a Branch of Surgery, which seems to have received very great Improvements from the Moderns, particularly in what regards the Operation for these Disorders. I shall therefore endeavour to point out these Improvements, and, in order to make them more intelligible, shall first give an anatomical Description of the Seat of each particular *Hernia*.

B

THE

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THE Parts through which these *Viscera* protrude, are sometimes the Navel, when it is called an *Exomphalos*, or *Hernia Umbilicalis*; sometimes the Rings of the Abdominal Muscles, when it is called a *Hernia Inguinalis*, if the Tumour be only in the Groin; a *Hernia Scrotalis*, if it reach to the *Scrotum*; and in both Cases more commonly a *Bubonocoele*. When there is only *Intestine*, it is also called an *Enterocoele*; when *Omentum* only, *Epiplocele*; and when both, *Entero Epiplocele*: Sometimes they pass under the *Ligamentum Poupartii* with the Femoral Artery and Vein into the Thigh; in which Circumstance it is called a *Hernia Femoralis*: sometimes through various Interstices of the Abdominal Muscles, when it is called a *Hernia Ventralis*; and, lastly, sometimes through the great *Foramen* of the *Ischium*. The *Intestines* and *Omentum* are the *Viscera*, which generally form the *Hernia*: But there are a few Examples where the Stomach and the Bladder make the whole, or a part of the *Hernia*.

THE *Intestines* and *Omentum* are contained within the *Peritonæum*, so that whenever they protrude from the *Abdomen*, they must either carry the *Peritonæum* along with them, or burst through it: The Ancients admitted of both Cases,

Cases, believing that when the descent of the *Viscera* was no lower than the Groin, the *Peritonæum* was only dilated; when it pushed down into the *Scrotum*, it was ruptured: and from this last Supposition, the Distemper itself was called a *Rupture*: The Moderns deny the Rupture of the *Peritonæum*, not so much as granting it possible on any Occasion whatsoever, except where there may have been a previous Wound of the *Peritonæum*, in which Circumstance they believe the *Cicatrix* may open, and admit of the Insinuation of the *Viscera* through it; but though this be the generally received Opinion at present, it is evident to me, that notwithstanding the *Peritonæum* may at first fall down with the *Viscera*, yet in length of time it may also be ruptured; because I have found the *Intestine* and *Omentum* within the *Tunica Vaginalis* of the Testicle, and in contact with the Testicle itself, which they could not possibly have been, if they were enveloped in a portion of the *Peritonæum*: However this Circumstance occurs but rarely; for we usually find the *Viscera* within a *Prolapsus* of the *Peritonæum*, which *Prolapsus* is now known by the Name of the *Herniary Sac*. Amongst the several Species of *Hernias*, the *Bubonocèle* seems to be the most common; I

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shall therefore begin with the Examination of that particular kind ; and the rather, because the right Understanding of this one Species of *Hernia*, will open the way to our conceiving rightly of all the others.

THE *Bubonocoele* is formed by the descent of the *Intestine*, or *Omentum*, or both, through the *Rings* of the Abdominal Muscles into the *Tunica Vaginalis* of the Spermatic Cord, and sometimes even into the *Tunica Vaginalis* of the Testicle : But as this Distinction between the two *Tunicæ Vaginales* of the Cord and Testicle, is not universally well known, it may be proper before I enter into the farther Consideration of this Disorder, to give an Anatomical Idea of these Parts.

THE Spermatic Artery and Vein lie contiguous to the back part and outside of the *Peritonæum* : they, in common with the Ureters and Kidneys, are contained in a cellular Membrane, which is continued all along the Spermatic Cord down to the Testicle, and is covered externally with a thin *Aponeurosis* arising from the parts surrounding the Ring of the Abdominal Muscles ; this external Covering is also enveloped with the Cremaster Muscle, and was formerly considered as a *Tunica Vaginalis* common to both the Cord and the Testicle,

Testicle, but the Moderns have divided it into two; so much of it as invests the Cord, they call the *Tunica Vaginalis* of the Cord, and that which contains the Testicle, the *Tunica Vaginalis* of the Testicle. They imagine the *Tunica Vaginalis* of the Cord, to be a loose Sheath framed for the reception of the Spermatic Vessels and *Vas deferens*; but the Notion of a Vacuity in this Place is groundless, those Vessels being evidently connected with one another and with the Investing Membrane, by the Intervention of the cellular Membrane: Nevertheless, when the *Herniary Sac* falls into the Groin or *Scrotum*, these Cells give way as it advances, and the Investing Membrane together with the Cremaster Muscle which covers it, become distended, and form in consequence of that Violence an absolute *Vagina*; which Circumstance may possibly have given rise to the Opinion of a natural Vacuity in the *Tunica Vaginalis* of the Cord.

THE *Tunica Vaginalis* of the Testicle is a loose Sheath formed to contain not only the Testicle itself, but a small quantity of Water for lubricating the Testicle. Its external Coat is a continuation of the Investing Membrane of the Cord, but its internal one is proper to the Testicle, being in its upper Part connected with the

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Spermatic Cord, so as to make it a distinct Bag : This upper part of the Bag which embraces the Cord, being considered as dividing the *Tunica Vaginalis* of the Testicle from the *Tunica Vaginalis* of the Cord, is therefore named the *Septum* of the *Tunicæ Vaginales* : And as these Coats have been supposed to arise from the *Peritonæum*, they have in all Ages, been likewise called the *Processus Peritonæi*.

¹ S O M E of the Moderns knowing that the *Tunica Vaginalis* arises absolutely on the Outside of the *Peritonæum*, have thought it improbable that the *Viscera* should insinuate themselves within its Cavity, and have imagined that the *Herniary Sac* lies on the Outside of the *Tunica Vaginalis* between it and the *Membrana Adiposa* ; but they are mistaken, if not always, at least for the most part, because the investing Membrane of the *Tunica Vaginalis*, arising from the Circumference of the *Rings* of the Abdominal Muscles, as I have just now mentioned, does necessarily by that Situation lie open to receive the descending *Viscera* ; in consequence of which, the *Viscera* and *Sac* insinuate themselves within the *Tunica Vaginalis* of the Cord, lying upon the *Tunica Vagi-*

¹ Vide Verduc's *Operations*, Chapter on the Bubonocèle. Sharp's *Operations*, Chapter on the Bubonocèle.

nalis of the Testicle. This is the usual seat of the *Hernia Scrotalis*, as is evident not only from Dissection, but also from the Distinctness of the *Hernia Intestinalis*, and the *Hernia Aquosa*, when they happen to be complicated on the same Side of the *Scrotum*: Nevertheless, as I have already asserted, it sometimes happens that the *Intestine* or *Omentum* are found within the *Tunica Vaginalis* of the Testicle, not contained in a Sac, but lying immediately in contact with the body of the Testicle: This perhaps may appear surprising, not only because it necessarily implies a Rupture of the *Peritonæum*, but because the *Viscera* must also be forced through the Part, which I have just described as the *Septum* of the *Tunicæ Vaginales*.

EVERY *Hernia* arises from a Relaxation of the Parts through which the *Intestine* and *Omentum* pass, and is therefore generally occasioned by violent Efforts of the *Viscera* against the abdominal Muscles, but sometimes the Relaxation is so great, that the Descent happens at a certain Period of Time, without any other evident Cause to produce it: Some assign the ² Thinness of that particular Portion of the *Peritonæum* which covers the several

² Wiseman, Vol. 2. Page 241. 5th Edit. 8vo. Paulus Ægineta, 301. Strasburg Edit. 1542.

Openings of the *Abdomen*, as another Cause of *Hernias* ; but if the *Peritonæum* was ten times thicker than it is, it would not alone prevent the Protrusion of the *Viscera*, were the Openings of the *Abdomen* relaxed.

IN Infants the *Bubonocèle* is a frequent Complaint ; but much the greater Part of these *Hernias* are recovered by the mere Strength of Nature ; for as they advance from their infant State, the Muscles of the *Abdomen*, and the Tendons of the Rings, become more rigid and resist the future falling of the *Viscera*. When the Disorder happens to Children of about two Years of Age, the proper Bandages to support the *Hernia* within the *Abdomen* are more necessary ; not but that Nature overcomes the Illness in every Part of Youth, tho' the older the Patient is, the more necessary it will be to call in the Assistance of Art ; but still it must be remembered, that even in the most tender Infancy, a Truss is useful, if it can be applied without galling the Child. Very fat People are likewise subject to this Malady, not only as a large *Omentum* conduces to supple the Rings, but as its very Weight may possibly tend to dilate them. And sometimes this Disposition to relax is so great, that the Rings of the Muscles become wide enough to admit much the greater
Portion

Portion of the Intestines and *Omentum* to fall through them into the *Scrotum*, and even without much Inconvenience to the Patient.

IN the beginning of a *Bubonocoele*, and in the generality of old *Bubonocoeles*, the Intestine returns of itself into the *Abdomen* upon lying down, or at least, is easily returned by the Hand: In this State of the Disorder, the Moderns content themselves with the Application of a proper Bandage, which is looked upon rather as a palliative, than a radical Cure; tho' in Youth, by a constant use, it generally is attended with Success, and even sometimes in advanced Years: For by supporting the *Viscera* in the *Abdomen*, the *Rings*, at length recover their tone, and contract to their former size, and sometimes by long Compression the two Sides of the *Tunica Vaginalis* of the Cord will possibly adhere, or at least contract so much as not to admit of the future Descent of the *Viscera*; or if the Intestine alone is reduced, and the *Omentum* remains, the *Omentum* itself will sometimes adhere and become an Obstruction to the falling down of the *Viscera*: But there have been various Methods practised formerly to effect an absolute Cure, and which, tho' disapproved of by the present Age, are not all of them, perhaps, so absurd as they are imagined.

SOME

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SOME of the principal Means employed for this End were Castration, the Caustic, the *Punctum Aureum*, and the Royal-stitch : The first of these Methods is so cruel an Operation, that it never found Countenance from the Learned, but was performed by ³ Itinerants only, and even amongst them, it is said, some were ashamed to avow the Extraction of the Testicle, and always endeavoured to conceal it from the Spectators : But however desperate the Remedy be, *Dionis*, its most violent ⁴ Adversary, grants it was effectual ; and it is certain if any thing can prevent the Relapse of the Descent of the *Viscera* into the *Scrotum* or Groin, it must be the stopping up the Channel through which they pass ; and this is done by the Ligature of the Spermatic Cord, with its *Tunica Vaginalis*, as is practised in Castration ; for when the Ligature drops off, it leaves a firm Cicatrix formed by a Consolidation of those Parts, which resists the future Protrusion of the *Viscera*.

WHEN the Cure is attempted by a Caustic, the Patient uses low Diet, and is kept in Bed during the whole Course of the Treatment ; both which Precautions are also necessary in the other Methods : When the *Hernia* is reduced, a

³ *Dionis*, 337. 4th Edit.

⁴ *Ibid.*

Caustic

Cautic of the Size of a half Crown is laid upon that Part of the Skin which covers the Rings, and ought to be of such a Strength, and to lie so long, as to destroy the Skin, the *Membrana Adiposa*, and the *Processus Peritonæi*, without injuring the Spermatic Vessels: The Slough is then either to be cut out, or left to digest off, after which it is presumed, that the Adhesions formed to the Circumference of the Rings, and to the Spermatic Vessels, will prove an Obstruction to the Descent of the *Viscera*; but from a great deal of Experience it has at last been discovered to be a very precarious Measure; for unless the *Process* be destroyed as well as the Fat, it will signify nothing, and it is found very difficult to ascertain the Strength of the Cautic to such an Exactness, that it shall reach just so far without injuring the Vessels themselves; so that after a fair Trial it seems now to have fallen into general Discredit.

THE *Punctum Aureum* was performed in the following manner. The Patient being laid on his Back, and the Contents of the *Hernia* returned into the *Abdomen*, as is always done before any of these Operations are undertaken, the Surgeon makes a transverse Incision through the Skin and Fat, down to the *Processus Peritonæi*; then with a crooked Needle he carries

carries a golden Wire under the Cord close to the Rings, and with a Pair of Pincers twists the two Ends of the Wire so as to prevent any Communication of the Channel below the Wire, with the Channel above the Wire : But it required great Skill to execute this Process of the Operation with due Exactness ; for if the Stricture was made too tight, the Circulation of the Blood in the Spermatic Vessels was obstructed, and consequently the procreative Faculty destroyed ; if it was not made tight enough, the Purpose of the Operation was not answered. Upon these Accounts it came at length into disuse, though it was at first approved of by some regular Practitioners.

5 THE Royal Suture was performed by laying bare the *Processus Peritonæi* a considerable Length from the *Rings* downwards, and then with a straight Needle and waxed Thread, sewing it up by the Glover's Stitch, in such a manner as to leave the Spermatic Vessels free, at the same time that the Channel of the *Process* was shut up ; by which means the Return of the *Omentum* or Intestine was prevented : The Conceit of saving many of the King's Subjects by this means, without impairing the propagating Powers, gave the Name

5 Dionis, 334.—Aquapendente, 274. Padua Edit. 1666.

of Royal Suture to the Method. This Operation is likewise absolutely exploded by the Moderns, but I am inclined to think it would generally prove successful, if it was practised with the following Improvements, which is very little different from the Method followed by *Parey* ⁶, *Wiseman* ⁷, and others, who seem to favour this Operation.

WHEN the *Processus Peritonæi* is laid bare by the longitudinal Incision, and the *Membrana Adiposa* a little dissected away, so that the *Process* may be freely taken up between the Finger and Thumb of the left Hand, I would advise the same kind of Suture with the above-mentioned one, only, that every Stitch should be carried from the *Process* through the Skin on that Side next the *Penis*, and be again returned from the Skin through the *Process*; whether the Suture be carried from above downwards, or from below upwards, that Portion of the *Process* close to the *Rings*, must be sewed in almost its whole Diameter to the Skin, otherwise the *Viscera* may still protrude. When the *Process* is thus attached in its lower Part to the Skin, all that Portion of it above the Course of the Suture (which I presume should be an Inch and a half long) may be cut off

⁶ *Book 8. Chap. 16. English Edit. 1678* ⁷ *Page 250.*

with

with a Pair of Scissars, which will facilitate the Digestion of the Wound. I will not take upon me without Experience, to recommend this Method of Cure very strongly; but if in the imperfect Manner it was formerly practised, they found some Success, which is not denied, I suppose with the Advantages here proposed, it would be much more certain; though to speak my Opinion on this Subject, I would never persuade any Patients to undergo an Operation for a *Bubonocèle*, whilst in this moveable State, but rather to acquiesce under the Relief procured by a Truss: However, as some People are so uneasy, that they will expose themselves to any Measure in this Circumstance, for the hopes of a radical Cure, I should prefer, upon such an Emergency, the Operation here proposed to the Methods now employed. It must in its Nature be more effectual than the Caustic, and I think less dangerous than the common Operation for the *Bubonocèle*, and besides, it will be much less liable to a Relapse, which the usual Operation for the *Bubonocèle* is very subject to. Perhaps it may be objected, that there is great danger of wounding or sewing up the Spermatic Vessels; but as they run along the back Part of the *Process*, both the one and the other will be easily avoided,

avoided, though indeed, it is not a Species of Suture that will constringe the Vessels, nor do I imagine it would be hurtful, if by chance any of them should be punctured.

I HAVE thus far considered the *Bubonocèle*, as being moveable at pleasure into the *Abdomen*; but there are an infinity of Instances, where it remains perpetually in the *Scrotum*; this generally arises either from the Adhesion of one Intestine to another, and of the Intestine to the *Omentum*, or else from the Adhesion of the *Viscera* to the *Sac*, and of the *Sac* to the *Tunica Vaginalis*. In both these Cases it is usual to suspend the *Scrotum* with a Bag-Truss, and make no farther Attempts; but it having ⁸ frequently happened to People afflicted with monstrous *Bubonocèles*, that the *Hernia* has intirely disappeared, after a long Illness which has confined them to their Beds, and greatly emaciated them; Some of the Moderns have imitated this Operation of Nature, and by frequent Bleedings and repeated Purges have so far reduced the Size of the *Hernia*, that it has been returned into the *Abdomen*, and there easily supported by a proper Truss. It must be observed, however, that this Method cannot prove successful, but

⁸ Le Dran, 114. French Edit. Arnaud, 292.

when

when the *Viscera* adhere only to one another ; for where they adhere to the *Sac*, and the *Sac* to the *Tunica Vaginalis*, or where they adhere to the *Peritonæum* just within the *Abdomen*, as is sometimes the Case, the Attempt will be fruitless. It is also worth remarking, that as the Cure depends upon emaciating the Parts, the more *Omentum* there is in the *Hernia*, the more probable the Success will be, because *Omentum* will waste in a greater Proportion than the other Parts : Though if the *Hernia* be formed of *Intestine* only, it may likewise succeed, especially if the Glands of that Part of the *Mesentery* which is in the *Scrotum* happen to be enlarged ; for by these Evacuations they will be exceedingly diminished, and ⁹ consequently make room for the return of the obstructed Intestine.

From the Principle just laid down, it should seem that when the *Hernia* is composed of *Omentum* only, the Probability of a Cure should increase ; but if I judge rightly, it is an Instance where the Experiment is not worth making, I mean if the *Hernia* be large ; for though by this means you do restore the *Omentum* into the *Abdomen*, yet when it replenishes again, as it will do when the Patient returns to

his former manner of living, it will be apt to fall down again into the *Scrotum*, or lie uneasily pressing against the Cushion of the Truss: But the greatest Exception to this Method of Cure in every Species of *Hernia*, is the want of an absolute Criterion, by which to distinguish when the Parts do or do not adhere to the Herniary *Sac*; and in advanced Years, though one was sure that the *Viscera* were free from the *Sac*, the Possibility of hurting the Habit of Body by the necessary Evacuations, is also another Objection to the Experiment.

I SHALL come now to the Examination of the *Bubonocoele*, in that Stage of the Complaint where the *Viscera* are inflamed, and at the same time, strangulated by the Rings of the Muscles. This is a very dangerous Situation, and though often relieved by medical Means, yet it also often ends in a Gangrene of the Parts, unless the *Stricture* be removed by the dilatation of the *Abdominal Rings*, which Process is called the Operation for the *Bubonocoele*.

SOME Surgeons of the greatest Judgment, believing there is no danger in the Operation itself, impute the frequent Miscarriages after the Operation merely to the desperate Circumstances of the Patient before he will undergo
C it:

it : But though it is true, that the Event of the Operation would not be so often fatal as it now is, were Patients to submit soon after the Beginning of a Strangulation ; yet I cannot but judge the Opinion of its innocence to be ill-grounded ; and to me it appears a little strange, the Notion should be so universal, when it is known that thick Membranes seldom digest but with some hazard : And in this Case, not only the thickened *Tunica Vaginalis*, but the *Peritonæum* are laid open, and the tendinous *Rings* of the Muscles must be digested before the Wound can be healed ; besides, that the exposing the *Viscera* to the Air, and handling them in the manner we are obliged to do in the Operation, when we return them into the *Abdomen*, may probably sometimes be mischievous ; but what is still a more convincing Argument of its precariousness is, that many have died after the Operation, though performed long before the Symptoms of an approaching Mortification would probably have appeared. It becomes therefore a Matter of the greatest Concern, to try first the most effectual Methods for restoring the *Viscera* into the *Abdomen*, without the Assistance of the Operation, till an approaching Gangrene, or at least, some other urgent Symptoms

Symptoms compel us to it ; though it must be confessed, that to determine rightly upon the critical Time when to perform the Operation, is a very delicate Point, and requires the utmost Discernment.

As the Inflammation of the *Viscera*, and all the other Symptoms attendant upon a strangulated *Buboncele*, seem evidently to arise from a stricture of the *Rings* inclosing the Parts, the Intention of Surgeons in all Ages has been directed to the removal of the *Stricture*, and Discussion of the Inflammation. To this end, plentiful Bleedings and repeated Clysters have been universally approved of ; and ¹ some lay great Stress on Clysters of the Smoke of strong Tobacco. Emollient oily Cataplasms for the Relaxation of the Tendinous *Rings*, have also been generally applied ; and, previous to these, emollient Fomentations ; but some eminent ² Practitioners have rejected all warm Applications, supposing that in an Inflammation the Vessels are already expanded by the rarified Blood, and that hot Stupes must therefore aggravate the Disorder. Upon this Principle, they have run into another Extreme, and recommended the Application of cold Water,

¹ Heister, 807. ² Belloste, *Chirurgien d'Hôpital*. Vol. II. page 156. *Edit. tertja*. Paris.

imagining it will condense the Fluids, and by thus diminishing the bulk of the Part, make it capable of being reduced : But I believe I may venture to say, that cold Water applied to this Species of Inflammation has a dangerous Tendency ; and there are others besides myself, who (however they approve of it in the Beginning of the Strangulation) ³ dissuade us from the Use of it in a great Degree of Inflammation. Nevertheless, it must be observed, that the Advocates for this Doctrine quote their Experience for the Truth of it ; but I suppose, Experience in this, as well as many other Cases, may be a fallacious Guide ; for if the Inflammation subsists several Days, in that Time the *Hernia*, as well as every other Part of the Body, is so lessened, by the Evacuations and Symptomatic Fever, that the *Viscera* may be readily returned ; and this we see is a very common Event, not only after the usual Methods of Treatment, but even where all Applications have been neglected.

PURGING in this Disorder is almost universally condemned, or rather in these Days not so much as mentioned. ⁴ *Celsus* has said,

³ Heister, 837. Gorter, 352.
Edit. 1730.

⁴ *Lib. 7. cap. 20. Leyd.*

that Purging may increase but cannot diminish the *Hernia*, and perhaps it may be true: However, I have often seen small Doses, such as the Stomach could bear, given every two or three Hours, and I think with good Success. I will not pretend to account for the Operation, as I am not quite sure of the Fact; but possibly the Peristaltic Motion of the Guts may be so augmented, as to make the Intestine next to the *Sac* draw out forcibly a part of the *Intestine* from within the *Sac*, and in that manner make room for the rest to follow.

BUT these Methods will generally avail but little, without the Surgeon's Endeavour to push the *Hernia* from the *Scrotum* back into the *Abdomen*; and indeed we depend so much on this Attempt, that we always use our utmost Efforts for that Purpose, before we employ the Measures I have already mentioned. To effect the Reduction more certainly, it is admitted by all Surgeons, that the Buttocks of the Patient should be raised higher than his Head, and his Knees bent, that the reclining Posture of the *Abdomen* may favour the return of the *Viscera*, though they⁵ always order the Chest to be bent a little forwards, that the

⁵ Le Dran, 116.

Abdominal Muscles may be in a lax State, imagining that if they were upon the Stretch, the *Rings* would be more contracted and consequently increase the Strangulation; but I have so often, immediately after having tried this Method in vain, succeeded in the Reduction by suspending the Patient with his Head downwards, and his Hams bent upon the Shoulders of a strong Man, that I am inclined to believe the Extension of the Abdominal Muscles is no impediment to the return of the *Viscera*, and it is very probable, that the whole Weight of all the *Viscera* in the *Abdomen* drawing the *Viscera* within the *Sac* perpendicularly downwards, may greatly contribute to dislodge them from that Part; especially if it be true, that when we find it difficult to reduce all the *Intestines*, we may upon this Principle finish the Reduction by placing the Patient on his ⁶ opposite Side.

THE Reduction by the Hand should be performed with great Caution, and in the *Bombocèle* we should always endeavour to push the Parts towards the *Ilium*, that being the Direction in which the *Hernia* lies: We must not compress too rudely, nor must we soon desist from the Attempt; for by long handling

it we frequently at length succeed. Perhaps the *Fæces* are insensibly propelled by this means from the *Hernia* into the *Abdomen*, which rendring the Volume of the Tumour less, may make it moveable : Perhaps, by Compression the Fat may be gradually pushed forward out of the Cells of the *Omentum* below the *Rings* into the Cells above the *Rings*, which will lessen the *Hernia* ; or perhaps sometimes a Portion of the Intestine entangled in the *Omentum* may be disengaged, which slipping up may make room for the rest to follow. Some employ a hot Stupe, in which they inclose the *Scrotum* when they attempt the Reduction ; but I think we have a better Management of the Part when it is dry and we use our bare Hand : We are not to despair of Success tho' we should at first be baffled in our Endeavours, but must renew our Efforts from time to time, unless we perceive the Symptoms of an approaching *Gangrene* ; and it will be always right to take the Advantage of a Bleeding, for if by chance the Patient should faint, the Relaxation of the *Rings*, and abatement of the Tension in the *Hernia*, during the *Deliquium*, furnish an Opportunity which ought not to be neglected ; on this Account the Patient should sit up when he

is blooded, because in this Posture he will be more liable to faint.

THE Method of pricking the Intestines with a Glover's large Needle in order to restore them, by discharging the Wind, and diminishing their Bulk, is condemned by all the Moderns; tho' not upon unexceptionable Grounds; for I think it is not true, that a Number of Punctures, sufficient to evacuate a Quantity of Air, will ⁷ be pernicious to the Intestines; But as it can only be practised with Benefit in a *Hernia Intestinalis*, and no body has had much Experience of the Method, except the ⁸ Writer who recommends it, we must wait for further Experiments, before we either peremptorily approve or explode it.

IF all these Measures fail, the Operation becomes the only Resource; but, as I have mentioned before, it is very difficult to determine exactly upon the most expedient time. It is ⁹ said by some, that if there be Intestine only, the Operation should not be deferred longer than Twenty-four Hours; by others, longer than Forty-eight Hours; especially in young People, where the Mortification is said to come on faster than in advanced Years;

⁷ Dionis, 86.

⁸ Peter Lowe.

⁹ Gorter, 352, 790.

But if the *Omentum* accompany the Intestine, all agree it may be postponed with Safety : For the *Omentum* surrounding the Intestine and serving as a soft Bed for it, prevents that Excess of Strangulation, which the *Hernia Intestinalis* is incident to : This Remark is so far true, that it were to be wished the Rules laid down for distinguishing the one Species of *Hernia* from the other, were more certain ; but the usual Thickness and Tension of the *Herniary Sac* is so great, that we cannot always evidently discover what are the Contents, when the *Hernia* is in an inflamed State : And as to the different Symptoms, excited by the different *Hernias*, I believe they are as little to be depended upon ; for though the Symptoms of a *Hernia Intestinalis* are in general, as I have hinted, more pressing than those of the other *Hernias*, yet even here we meet with numberless Exceptions. In some, that have died in a short time after the Strangulation, great Quantities of *Omentum* have been found in the *Sac* with the *Intestine* ; and in others, who have lain languishing many Days with an *Enterocoele*, upon performing the Operation, the *Intestine* has been found very little injured ; nay, it is sometimes hard to

† Heister, 790.

distinguish

distinguish betwixt an *Epiplocele* and an *Entero Epiplocele*; for, if a free Passage from the Stomach to the *Anus* is the Characteristic of an *Epiplocele*, there are Examples where only a part of the Circumference of the *Intestine* has been niched into the *Rings*, and admitted of the Progress of the *Fæces*: On the contrary, there have likewise been Instances, where all the Symptoms of a strangulated *Intestine* have appeared, and upon performing the Operation² it has been discovered to be a mere *Epiplocele*.

I AM of Opinion therefore, that the exact knowledge of the Contents of a *Hernia* (supposing we could know them) is not the sufficient Guide it has been commonly represented to be; and that it must depend upon the Surgeon's Skill to determine also by other Symptoms, whether from a farther delay of the Operation, the Patient may not be too much exhausted, and a Gangrene of the Parts be endangered, which last Circumstance is usually mortal; tho' every Man of great Practice has met with Exceptions to this Rule, and indeed the Moderns have, from the possible occurrence of this³ Exception, made very singular Improvements in the Operation.

² Garengot. *Vbl.* 2. p. 257, 258. *Edit.* 2. ³ Heister, 808. Le Dran, 123.

THE common way of beginning the Operation is by pinching up the Skin transversely in that part which covers the *Rings*; and then, by insinuating a Director between the Fat and the *Tunica Vaginalis*, to extend the Incision an Inch above the *Rings*, and a considerable Length below them towards the bottom of the *Scrotum*; but it is a much easier and quicker Method to begin your Incision at once, an Inch or two above the *Rings*, and continue it at one Stroke as far as you propose to carry it, which may be executed without any risk, by a Man accustomed to Dissections.

WHEN you have thus cut through the *Membrana Adiposa*, you must clear it away with your Knife from the *Tunica Vaginalis*, which will then give you an opportunity of opening that Membrane and the *Herniary Sac*, in the manner that shall best suit the Circumstance of the Case: When the *Hernia* is recent, it is said the *Sac* is thin, so that you may pinch it up a little between your Finger and Thumb, and make a small Orifice into it either with a Knife or Scissars, without any risk of wounding the *Intestine*; after which, either a Director may be introduced to cut upon with a Knife, or the Incision may be dilated with a Pair of Probe-Scissars: But
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when the *Hernia* is old, the *Laminæ* of its Membranes are exceedingly thickened, and so tense, that they cannot be pinched up for this Process : Under such a Circumstance, we are ordered to push a pointed Director obliquely forward between *Lamina* and *Lamina*, cutting them as it advances, till we arrive within the *Herniary Sac*, and then to proceed in the manner just now described : This Measure is calculated to obviate the Danger of wounding the *Intestines* ; but it is a tedious Process, and I question whether it be more safe than cutting gradually a small Orifice through the several *Laminæ* with the Point of the Knife. It is hardly of any importance how small the Orifice is, for if it admit only the blunt End of a Probe into the *Sac*, you may, by lifting it up, enlarge the Orifice at Pleasure, tho' sometimes there is Water in the *Sac* which rushes out at the Orifice, and shews evidently there is Space for the safe dilatation of the Wound. Yet it must be admitted, this is a part of the Operation, which perhaps demands the most Delicacy in operating of any other.

WHEN the *Herniary Sac* is laid open from its very Bottom up to the *Rings* of the Muscles, and the Blood-Vessels tied, if any *Hæmorrhage* has

has ensued, we are then to prosecute the Operation according to the State of the *Viscera*: In an *Entero Epiplocele*, if the *Omentum* be not mortified, it is adviseable to return it entire into the *Abdomen* with the *Intestine*, but it seldom happens that People submit to the Operation before some part of the *Omentum* is gangrened: To make way for the return of the *Intestine* and *Omentum*, the *Rings* must be dilated, for which purpose the Moderns have devised a great variety of Instruments; but however ingenious their several Inventions may appear, as I am persuaded they are none of them so handy as the crooked Knife with a blunted Point, I shall not enter into the Examination of their particular Merits or Defects, but shall recommend this Instrument only, with which I have always dilated the *Rings* of the Muscles without pricking the *Intestines*: The manner of performing this Process, is by pressing down the *Intestines* with the Fore-finger, and then introducing the Knife between it and the *Rings* of the Muscles, to dilate them a little obliquely upwards and outwards about an Inch, which will be a Wound large enough.

I HAVE here proposed the opening of the *Herniary Sac* previous to the Dilatation of the *Rings*;

Rings ; though to avoid the least risk of wounding the *Intestines* in the Dilatation of the *Rings*, it may be performed as soon as the Skin and *Membrana Adiposa* are cleared away from the *Tunica Vaginalis*, that is, before you open the *Sac*, in which Circumstance it is almost impossible to incur this Danger ; but I cannot recommend this Process for several Reasons : First, it is not impossible, that upon freeing the Strangulation, the *Viscera* may suddenly return into the *Abdomen*, and carry with them a mortified Portion of the *Omentum*, or a mortified Part of the *Intestine*, both of which should necessarily be cut off before the sound Parts are reduced. Secondly, the *Hernia* may be of a Nature not to require the Dilatation of the *Rings* ; for ⁴ it is said, that by drawing a little more *Intestine* from the *Abdomen* into the *Hernia*, it will sometimes disengage the Strangulation, and render the Reduction easy, without dilating the *Rings* ; and lastly the *Herniary Sac* may happen to be so contracted as to require absolutely a Dilatation, which will be farther explained.

M O S T Writers speak of the Danger of wounding the *Epigastrick Artery* in the Dilatation of the *Rings*, and recommend different

⁴ Le Dran. 126. Verduc, p. 24. Edit. 1693. Paris.

Methods of stopping the *Hæmorrhage* ; but the Course of that Artery is generally so much nearer to the *Linea Alba* of the *Abdomen*, than where this Incision is made, and so much beneath the *Hernia*, that it is not exposed in the manner they represent: Though should a Vessel as large as the *Epigastrick Artery* be wounded, it would give little or no Trouble to a Surgeon who understood the use of the Crooked Needle.

I HAVE hitherto spoke of dilating the *Sac* as far as the *Rings*, and then of dilating the *Rings* in order to free the Strangulation ; but it has been lately discovered, that the Stricture of the *Rings* is not the only Cause of a strangulated *Intestine* ; and this Discovery has opened a new Scene of Improvements. It is now universally acknowledged, since the ⁵ first Hint was given about thirty-five Years ago, that the Entrance into the *Herniary Sac* is capable of so great a Contraction as to compress the *Intestine*, and excite the same Symptoms with a Stricture of the *Rings*. ⁶ There are Examples where the *Hernia* has been reduced into the *Abdomen*, and notwithstanding the Reduction, all the Complaints have con-

⁵ Le Dran, *Observ.* 58. — Arnaud, 382.

⁶ *Observ.* 58. Le Dran. — Arnaud, 372. &c. Dionis, 324.

tinued

tinued as before: In some of the Instances the Patient has died, and upon opening the Body, it has appeared that the *Herniary Sac* was returned with the *Viscera* into the *Abdomen*, where still continuing to constringe them as much as it did when in the Groin, it at length proved mortal. In others, the same thing has been proved by the Operation; and it is worth observing, that the Hardness of the Tumour is sensible to the Finger, when it is introduced through the Passage by which the *Hernia* was formed, and will help to inform us of the State of the Case: Besides, when the *Sac* is returned with the *Intestine*, it is done without any Noise, whereas when the *Intestine* is returned alone, it may be heard to move; which Circumstance will help to distinguish the one from the other.

It is hardly to be doubted, that this Stricture in the Entrance or Neck of the *Herniary Sac*, arises generally from the Pressure of a Truss, which bringing the two Sides almost into Contact with one another in that part near the *Rings* of the *Abdomen*, at last determines it into that Shape. But though I have here spoken of the Return of the *Sac* with the *Viscera*, when the *Hernia* is reduced, it must be remarked that the Case is not very common;

mon; for in most *Hernias* the *Viscera* only are reduced, and the *Sac* remains in the Groin or *Scrotum*; at least it has so happened that in all the Instances, where I have either performed the Operation, or examined the Case in a dead Body, the *Herniary Sac* has adhered intimately to the internal Surface of the *Tunica Vaginalis*, and has not presented the Idea of one Bag within another, but of a Bag with one dense strong Coat: So that it is not the *Herniary Sac* alone, but the *Tunica Vaginalis* also which undergoes this Alteration, whenever it happens on the Outside of the *Abdomen*.

THE greatest Use however, resulting from knowing the possibility of this Shape of the *Herniary Sac*, is the Instruction we receive from it to carry the Incision of the *Sac* as far as the Incision of the *Rings*, that is, about an Inch, which will usually be a sufficient Extent, though there should be a Stricture in that Place; but sure as this Rule may appear, it is always adviseable for greater Certainty, to introduce the Fore-finger of the Left-hand up the *Sac*, from which we may learn whether there be any part of the Stricture yet unopened.

BEFORE this Circumstance was attended to, and when it was believed that the Stricture
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of the *Rings*, and the Adhesion of the *Viscera* to the *Sac* were the only Impediments in Nature to the return of the *Intestines*, if by Chance such a Case occurred, and the *Rings* only were dilated, the Patient necessarily died; because the Strangulation was not relieved. However it must be confessed, that an ample Enlargement of the *Rings* and *Sac* was formerly recommended by ⁷ *Cyprianus*, though he was not apprized of this Accident; he says, a large Opening of the *Rings* and *Sac* is of great Service in facilitating the Return of the *Viscera*. But I think this Doctrine of a large Incision, though there be no Stricture of the *Sac*, cannot be inculcated too strongly; for when the Incision is large, we not only handle the inflamed and almost mortified *Intestines* with less Roughness in order to reduce them, but also escape the Consequence which follows upon wounding tendinous Parts without dividing them; as possibly may sometimes happen in this Case to timorous Operators, who just make a slight Incision into the Edges of the *Rings*, without carrying it through them.

THE Dilatation of the *Rings*, and Neck of the *Herniary Sac*, is a Process in the Operation which takes place in the order I have men-

⁷ *Epistola de fœtu ex Uteri tuba exciso*, p. 82.

tioned,

tioned, if the Parts in the *Hernia* are sound ; but if any Portion of them is gangrened, the Gangrene is first to be cut away, whether it be *Omentum* or *Intestine*. Where the *Omentum* is mortified, the usual Method of treating it, is by tying a Ligature round the sound Part near the Extremity of the Mortification, and cutting it a little below the Ligature : the String is to be left hanging out of the Wound, that what remains may be taken away when it drops from the sound *Omentum* : The Design of this Ligature is to prevent the *Hæmorrhage*, which it is supposed might ensue. But there is one Objection to this Method ; for if the *Colon* falls down in a considerable Quantity, and you tie the *Omentum* near its Insertion, when that *Intestine* returns into the *Abdomen* it cannot be restored to its former Situation, because of the Confinement from the Ligature ; and the Mischief, which may flow from its constant endeavour to possess its former Figure, may possibly be great. It is true that this Consequence may in some measure be obviated by making several Ligatures of the *Omentum* ; but it is a tedious Process : And upon the whole, I believe this Apprehension of Danger from the Bleeding is groundless ; for I have never found the least Inconvenience

from cutting off the diseased Part close to the sound Part, with a Pair of Scissars, as you would a Piece of Cloth, that is, not in the Mass as it lies in the *Scrotum*, but by spreading it in order to cut it. Besides, by cutting it in this manner you act with a Caution, that cannot be too much recommended in certain Species of *Hernias* where but a little of the *Intestine* is fallen below the *Rings*: I have performed the Operation, where so small a Quantity of *Intestine* was buried in a great Quantity of *Omentum*, that had I not disintangled it by separating the *Omentum* very carefully, I might possibly have included it within the Ligature.

I DO not deny however, that when the Symptoms of a strangulated *Intestine* are pretty evident, we are ordered to be careful in our Search for it; but still, I think the Method I have here advised of cutting off the *Omentum* will be the most effectual Means of discovering the *Intestine*, and by making a constant Practice of acting in this manner, it points out to us our Mistake before any Mischief is done, when there happens to be a Portion of the *Intestine* in what we have had reason to suppose a simple *Hernia Omentalis*, and which we should in consequence have treated accordingly.

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THE Advocates for the Ligature will no doubt alledge, that as the *Omentum* is not cut off in the sound Part, when it is retired into the *Abdomen* its mortified Extremity will slough off, and, floating in the *Abdomen*, prove pernicious to the *Viscera*: But I suppose, that being very inconsiderable in Quantity, it either wastes or is discharged by the Wound; for as I have said before, I never found any bad Consequence from it.

SOME Surgeons have practised the Extirpation of all the *Omentum* in the *Hernia*, tho' it was not gangrened; but I believe it is a rash Measure, and I am far from being singular in this Opinion, for a ⁸ celebrated Practitioner not only prohibits the Extirpation, but even orders it rather to be left in the Wound than cut off, tho' it cannot be returned into the *Abdomen*: He says that in two or three Days it will restore itself; but I am not sure that in such an Instance the Excision would be improper, for in all probability, after being exposed to the Air, it may be mortified at the time that it withdraws into the *Abdomen*.

THE manner of reducing the *Viscera* when they are neither mortified, wounded, nor adherent, is every where sufficiently explained;

⁸ Le Dran, 132.

but in these three Cases the Moderns only are worth consulting. A Mortification of the *Intestines* in the *Hernia* was till lately utterly despaired of. ⁹ It is recorded of *Rau*, that upon opening a *Hernia*, and finding a Gangrene of the Parts, he laid down his Knife and proceeded no farther in the Operation, abandoning his Patient, who died the next Day.

THE Surgeons of the present Age have surmounted this Prejudice; they saw small Gangrenes do well after the Operation, and sometimes they met with Instances of Recoveries, where the *Scrotum* sloughing away of itself, had made room for the Evacuation of the *Fæces*; they concluded therefore, that if the mortified Part was cut off, the Strangulation removed, and a free issue given to the *Fæces*, the Patient might probably survive, who otherwise would perish without this Assistance.

¹ The Collection of Cases where a great length of mortified *Intestine* has been cut out of the *Hernia*, is now become very large: Amongst them there are Instances where five or six feet of the Gut have been taken away,

⁹ Heister, 816.
Cheselden, 170. *Edit. 3tia.*

¹ Dionis, 352, 354. Heister, 818.

and the Patient has recovered ; but notwithstanding these Examples of Cure, the Surgeon is still to remember that Mortifications of the Bowels are very dangerous, and though the Attempt to relieve this Species of it be sometimes crowned with Success, it is never to be depended upon : It is always a doubtful Enterprise, though some of the most desperate have proved prosperous, even in Cases where the Patient would have died in a few Hours if the Strangulation had not been removed, and a free discharge procured for the *Fæces*.

WHEN the mortified *Intestine* is cut away from the live *Intestine* at each of its mortified Extremities, the two Openings of the live Gut are to be sewed together, if it can be done without too much Violence ; but sometimes it happens that they adhere, or lie so unaptly, that they cannot be brought into contact, in which case they are by a sitch to be tied to the Borders of the Wound, in order to prevent the Evacuation of the *Fæces* into the *Abdomen*, and from that time, the extremity of the upper one becomes an artificial *Anus* ; though it has been found that notwithstanding the *Intestine* is left open in the *Abdomen*, it may possibly be so compressed near the *Rings*, that the *Fæces* cannot be

discharged unless the Extremity of the Gut be dilated ; but this Inconvenience will be avoided, if the Incision of the *Rings* be made large ².

THERE are various kinds of *Suture* proposed for the union of the two Ends of the live Gut ; but I question whether any of them all be preferable to the *interrupted Suture* : One Extremity should be placed half a quarter of an Inch within the other, and be held there by three or four of these Stitches, one of which may also be carried through the *Peritonæum* near to the Edges of the Wound, which, by holding it in contiguity with the Wound, will conduce to form that Adhesion we find so absolutely necessary for the Consolidation of Membranes. This union of the two Ends of the living *Intestine* seems to have been performed upon Beasts, in Mortifications of their Bowels, some Years before it was introduced into the Practice of Surgery, as we read in ³ *Cheselden*, who is one of the first, who has hinted this remarkable Improvement.

THE Danger which is apprehended to arise from the Evacuation of the *Fæces* into the *Abdomen*, has led the Moderns into the Practice

² Arnaud, 344.

³ Edit. 3. 172.

of cutting away a certain Length of the *Intestine*, where it is not totally gangrened, but only here and there in certain detached Spots : They say, that should the *Intestine* be returned, the *Fæces* would be emptied into the Cavity whenever the *Eschars* should be separated ; and therefore if the Number of *Eschars* be great, the Method here proposed is adviseable ; but if there be only one or two *Eschars*, it is recommended either to wait some Days for the Separation of the *Eschar*, or to puncture them with a Lancet, in order to discharge the Contents of the Bowels, and to keep the *Intestines* in the *Scrotum* till the next Day, when it is presumed the greater Part of the *Fæces* will be discharged, and we may reduce the *Hernia* safely ; after which the Wound of the *Intestine* must be sewed to the *Peritonæum*. By taking this Measure, it is thought the Wound or Wounds of the Gut will more readily adhere to the neighbouring Parts, than if there was a continual Flow of the *Fæces* through the Wound, but the right Management of this Process requires the most consummate Judgment. For ⁵ though it is not true what has been anciently taught, that the *Intestines* corrupt immediately after they

⁵ Celsus, Lib. 7. Cap. 16.

are exposed to the Air ; yet that they are liable to suffer from being exposed, is beyond all Controversy ; and I am a little apprehensive, that a strong Belief in the Innocence of this Measure, may make us sometimes too precipitate in judging the *Intestines* to be mortified when they are not really so ; for though they are cold and almost black, they often recover their natural Warmth and Colour, soon after they are returned into the *Abdomen*. But what more particularly demands our Attention upon this Subject, is the great Number of Cases, where the *Fæces* have been safely discharged through the Wound from a gangrened *Intestine* ; and on the other hand, the few Examples, that are yet produced, of keeping a gangrened *Intestine* many Days in the *Scrotum* without any bad Consequence.

HOWEVER, keeping the *Intestines* out of the *Abdomen* for a time after the Operation, seems to be so little dangerous in the Estimation of the Moderns, compared with the Discharge of the *Fæces* into the *Abdomen*, that⁶ some of them do not admit of immediately sewing up the Wound of the *Intestine* made by Accident in the Operation, but advise us

⁶ Le Dran, 130.

to wait till the next Day, when they approve of the Reduction. In this and the preceding Case, they order a String to be passed through the *Mesentery*, near its Insertion into the *Intestine*, which is to be carried round the *Intestine*, (and I suppose through the Skin of the Wound too) in order to retain it in the *Scrotum*, otherwise after the Dilatation of the *Rings*, it would return of itself into the *Abdomen*.

WHEN a large Portion of mortified *Intestine* is cut away, it is said that the Vessels of the *Mesentery* may possibly bleed: I suppose this is an Event that will seldom occur, but when it happens, the Ligature must be repeated as often as shall be necessary.

IT now remains to be considered, in what manner we ought to act when Adhesions prevent the Return of the *Viscera*. In this Case the Adhesion is sometimes recent, arising from the present inflamed State of the Parts, and when this happens, the *Viscera* easily separate from the *Sac*, and from one another, by a gentle Laceration with the Fingers. Sometimes the *Viscera* adhere to each other so firmly from an ancient Agglutination, that the Separation would be very tedious, if not impracticable. In this Circumstance, if they do not
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adhere to the *Sac*, they should be all reduced in their adherent State, which may be easily done, provided the Dilatation of the *Rings* be made very large : But when the Adhesion to the *Sac* is old, we are ordered by most of the present Writers to abandon the Reduction. Our Predecessors, in this Situation endeavoured by Dissection to clear away the *Viscera* from the *Sac* and the Testicle, and very often with Success : But the Moderns speak of the Danger of wounding the *Intestines* in the Attempt, and recommend only the Relief of the Strangulation, by dilating the *Rings*, and leaving the *Viscera* in the *Scrotum*, unless there be a great Quantity of *Omentum*, in which Case all of it which is not adherent may be cut away. In these old adherent *Hernias* a fresh Portion of *Intestine* sometimes falls down, and becomes⁷ strangulated ; when this occurs, the Operation consists in the Dilatation of the *Rings*, and the Reduction of that Portion of *Intestine* only : I mean upon the Supposition that the Adherences are really inseparable, for I have found myself, as a late⁸ Writer has remarked, that the Adhesions sometimes are not universal, but formed by a certain Number of *Frænula*, which may be easily snipt with a

⁷ Dionis, 348.

⁸ Arnaud, 316.

Pair of Scissars, whether they be in the *Sac* itself, or the Neck of the *Sac* within the *Abdomen*, after which the Reduction may take place. Separating Adherences from the *Péritonæum* within the *Abdomen*, is not a new Thought ; for it is one of the principal Motives which induced *Cyprianus* to advise so large a Dilatation of the *Rings*.

⁹ AMONGST other Improvements of the Operation for the *Bubonocèle*, it has been recommended in recent *Hernias*, to return the *Viscera* into the *Abdomen* without opening the *Sac*, from a Persuasion that the Patient would be less liable to a Relapse : But I do not find the Proposal has met with a favourable Reception. And indeed the Objections to this new Method seem unanswerable : For frequently there is a fetid Water in the *Sac*, which may prove pernicious when voided in the *Abdomen* : Frequently the *Omentum* and *Intestine* are mortified though the *Hernia* be recent, and if the diseased *Omentum* is not removed, nor an Opening made for the Issue of the Excrements, when the *Eschar* drops from the *Intestine*, the Event must in all Probability be mortal.

THERE have been great Disputes what Form of Application would best suit the

Wound. The Use of long thick Tents has formerly been celebrated, but at length Tents are exploded in favour of thick Dossils or Pledgits ; though, if the *Intestine* after the Reduction, makes an Effort to start through the Wound, it may be confined more effectually by a Stitch or two carried only through the Lips of the Skin. As to the manner of treating the Patient after the Operation, all Writers are nearly unanimous.

THE Operation for the *Bubonocoele* in Women does not differ very much from that performed on Men, notwithstanding that the *Herniary Sac* is more simple, having no *Tunica Vaginalis* to inclose it as in Men. The *Viscera* in this Species of *Hernia*, fall into the Groin or *Labia Pudendi*, through the Passages made for the Transmission of the *Ligamentum Rotundum* of the *Uterus* ; and the Strangulation in them is removed by an Enlargement of those Openings. ² It has been suggested as an Improvement of the Operation after the *Viscera* are returned, to make a Ligature round the *Sac*, that when it shall be healed, there may be no Communication left open with the *Abdomen* for the future Descent of the *Hernia*. For the same Reason it might

² Le Dran, 132.

likewise

likewise be recommended in all *Femoral Hernias*; but it is forbid in the *Bubonoccele* of Men, because the *Spermatick Vessels* would be constringed by the *Ligature*: However, I am afraid it would be injudicious in any of these Cases, as the Obstruction of those Discharges, which sometimes follow the Reduction of the *Hernia*, might possibly be running too great a Risk for the Benefit of preventing a Disorder, which, should it happen, is so manageable by a Truss.

THE *Hernia Femoralis* is formed by the Descent of the *Intestine* or *Omentum* into the Inside of the Thigh, through the Opening made by the Arch of the *Os Pubis* and the *Ligamentum Poupartii*, so that the Situation of the Tumour will be on the *Femoral Artery* and *Vein*. The Symptoms excited by this Species of *Hernia* are very nearly the same with those of the *Bubonoccele*, and require nearly the same Treatment; only, that in our Endeavour to reduce it, we should push the *Intestine* towards the *Linea Alba*, whereas in the other Case the Direction should be towards the *Ilium*.

THE *Hernia Femoralis* is much more frequent in Women than in Men, which Singularity is imputed to the Breadth of their
Ossa

Ossa Innominata, which allow Room for the Reception of the *Viscera* whenever they are violently compressed ; but I must own I do not see the Force of the Conclusion. I have heard indeed, of an habitual *Bubonocoele* having been cured by a Pregnancy ; and was the *Uterus* always distended, as it is in Pregnancy, it might possibly push away the *Viscera* from the *Rings* towards the *Ilia* ; tho' even then, I imagine it would equally prevent a *Hernia Femoralis*, and a *Hernia Inguinalis* ; so that this Situation of the *Viscera* does not account for the more frequent Occurrence of a *Hernia Femoralis*. I suppose therefore the true Reason why Women are more subject to the *Hernia Femoralis* than Men, is, that in general the Passages for the *Spermatic Cords* in Men, are, from their Wideness, more subject to Dilatation than the Openings for the Femoral Vessels, and the Passages for the *Ligamenta Rotunda* in Women, are, from their Narrowness, less liable to Dilatation than the other Openings.

It is very remarkable, that, common as this Disorder is, no Body ever described it before ³ *Verbeyn* ; or if they did, it was in such obscure Terms as not to be understood. The

³ Ejus Anatomica, Cap. de Periton. Edit. Postrema.

Operation consists principally in removing the Strangulation by dividing the *Ligament*. But to observe upon all the Particulars relating to it, would be, with very little Variation, to repeat what I have said on the *Bubonocèle*. I shall therefore only point out the most extraordinary Circumstance in this Operation. The obvious Method of cutting up the *Ligamentum Poupartii*, would be perpendicularly upwards, through the Middle of the Ligament; and following the Rule of making a large Wound, the Incision would be an Inch long: But this Rule, so useful in the Operation of the *Bubonocèle*, would be pernicious here, supposing the Subject to be a Male, for it happens that the Spermatic Vessels, in their Progress to the *Scrotum*, lie so directly across the Incision, that they would be necessarily divided. To avoid therefore so great an Inconvenience, I would advise the Incision to be made Obliquely outwards, by which the Spermatic Vessels will not be offended. But some Surgeons, who do not seem to be aware of the ⁴ Objection I have stated, provide rather against the Danger of dividing the *Epigastric Artery*, which would be possibly wounded by the Measure I have prescribed; however I shall be bold to say, it

⁴ Le Dran, 138.

is an Accident that ought not in the least to embarrass an Operator, for, was the *Epigastric Artery* much larger than it is, we might instantly take it up, now the Use of the crooked Needle is become so familiar.

BOTH in the *Bubonocoele* and the *Hernia Femoralis*, sometimes the small *Intestines*, and sometimes the *Colon* or *Cæcum* form the Tumour, but the *Cæcum* is more frequent in this Species of *Hernia* than in the other.

E X O M P H A L O S.

IT is a Question discussed by ⁹ some of the Moderns, Whether the *Viscera* are contained within a *Herniary Sac*, when they protrude out of the Navel; whilst others speak of the *Herniary Sac* without Hesitation. But it is no Wonder there should be a Variety of Sentiments, because the Case differs in different Subjects, and Surgeons judge from those which have fallen under their own Observation. In performing the Operation for this Species of *Hernia*, I myself have met with a *Sac* exceedingly thickened; but it's possible that had I performed it in a much more advanced Stage of the Disorder, I might not have found a

Sac: And what seems to confirm this Opinion is, that in another Operation I performed for an *Exomphalos*, I found the *Peritonæum* burst through in certain Places, whilst some Threads of it remained entire in others; and those Threads or Filaments of the *Peritonæum*, wherever they stretched, evidently bound down the *Intestines*, so as to make those Depressions and Eminences, which appeared in this Case, and often occur in the *Hernia Umbilicalis*. It is the Nature of Membranes to thicken as they extend to a certain Period, after which they grow thinner as they are stretched, and at last burst. This is the Case of an *Aneurism*, and I suppose of several *Hernias*. I presume too it is only by this kind of Reasoning we can account for that surprising *Phænomenon*, the Contact of the *Viscera* with the Testicle, in one Species of *Bubonocèle*; in which Circumstance it is probable, that not only the *Herniary Sac* itself, but also the Bottom of the *Tunica Vaginalis* of the Cord (*Septum tunicarum Vaginalium*) have been perforated by the *Viscera*, after which the *Viscera* fall into the *Tunica Vaginalis* of the Testicle.

WHEN the *Exomphalos* is small and reducible at Pleasure, the radical Cure may be effected in all Probability, by destroying the

prominent Bag of Skin, either by a Ligature carried round its Basis, or by a double Ligature carried through the middle of it, and tied above and below ; which kind of Ligature will be less apt to slip. By this Measure, the upper Portion of the Bag perishes, and the lower Part becomes a firm Cicatrix adhering to the Navel, which resists the future *Pro-lapsus* of the *Hernia*. Several of the Ancients recommend this Practice : Amongst the Moderns there is no one Writer advises it except ⁶ *Saviard*, who performed it twice with good Success, but his Patients were young. ⁷ *Heister* seems to lament this Method should have fallen so absolutely into Disuse, though he says it is questionable, whether a proper Bandage would not have worked a Cure in both these Cases : And I am so far of his Opinion, with Regard to the Efficacy of a Truss, that I should never think of the Operation where it could be properly applied ⁸.

⁶ Observ. 9.

⁷ Heister, 788.

⁸ In regard to the great Improvement of Surgery from the Use of Trusses, Fabricius ab Aquapendente records a very remarkable Anecdote of Fabricio de Norsia, the most eminent Surgeon for Ruptures in his Time. He says, that formerly he had operated every Year on about two Hundred Patients, but that now he scarcely cut Twenty ; having found by Experience, that a Truss, with an astringent Application, would cure a Hernia. Page 247.

THE Operation for the *Exomphalos* is more rarely performed, than for either of the Species of *Hernias* I have described ; and of those which are performed, a much less Proportion of them is successful. They generally happen to very corpulent People, so that there is usually a great Quantity of *Omentum* in the *Hernia*, and as it either adheres or is mortified, it becomes necessary to cut away a large Portion of it ; which being taken from its Middle, and not at the Extremity, as in the other *Hernias*, may, in all Probability, render it more unfit to heal. Besides, the Situation of the Navel does not favour the Issue of the Matter and Sloughs, as the Bottom of the *Abdomen* does, so that they spread about the *Abdomen*, and bring on a fatal Event in the End, however flattering the Prospect may be for some time.

THE usual Method of performing the Operation when the *Viscera* are inflamed, is by making a crucial Incision through the Skin, and laying the *Sac* bare ; after which it is opened with the same Precautions, as practised in the other *Hernias*. But though I have done it in this manner myself, yet I think it a tedious and unnecessary measure ; for it is as easy to make a small Opening through the

Skin and *Sac* at once, as to do it through the Skin only ; therefore when once you can introduce your Finger or Director, you may with a Knife or Probe-Scissars cut out a circular Piece of Skin and *Sac* large enough to expose the *Viscera* : After which, with your Fore-finger pressing down the *Intestine*, if there be any, dilate the Orifice about half an Inch or more on the left Side, a little Obliquely upwards ; and in this manner I have lately done it myself.

THE other Processes of the Operation have an exact Affinity with those already described in the other *Hernias* : I have pointed out the left Side of the *Ring*, as the most eligible Place for the Dilatation, because the Ligaments of the Umbilical Arteries and Vein would be less liable to be wounded, than if the Incision was made in another Direction.

THERE have been several Instances, where in an *Exomphalos*, a great length of the *Intestine* has mortified, and separating from the sound Part, the Navel has become an artificial *Anus*. I suppose therefore, if it was more frequently practised to cut away the gangrened *Intestine*, and to dilate the *Ring* in order to make Room for the Discharge of the *Fæces*, some People who now perish, might be preserved ;

served ; and perhaps too, in some Cases, the Extremities of the sound *Intestine* might be brought into Union, as is done in the *Bubonocoele*. To attempt such an Operation, almost in the Agonies of Death, may perhaps have the Air of a fondness for Cutting ; but, as in the Circumstance of an advanced Mortification, there would be very little Pain from the Incision, I should think it, though a desperate Remedy, still proper for so desperate a Case.

HERNIA VENTRALIS

Is a Disorder, where the *Viscera* protrude between the Interstices of the Fibres of the Muscles in any part of the *Abdomen* ; though the most remarkable *Hernias* of this kind are between the *Recti* Muscles, in some part of the *Linea Alba*. ⁹ *Celsus* describes this *Hernia*, and recommends the same method of Radical Cure, as is proposed for the *Exomphalos* ; but the Moderns confine the Treatment of them to Trusses, unless when they are accompanied with a Strangulation, in which Circumstance the dilatation of the Orifice through which the *Viscera* pass, is to be made as in the other *Hernias*. It is very necessary to obviate the

⁹ Cap. 17.

Increase of this *Hernia* between the *Recti* Muscles whilst it is small; for if the Patient neglects to wear a Truss, the Tumour becomes enormous; though indeed the same thing happens in some degree under all the Species of *Hernias*: And we have not a stronger Proof of the Disposition of an Animal Fibre to stretch, under a gradual Extension, than that such compact Substances as the tendinous Circumferences of these Orifices, should, in length of time, be so monstrously widened by the Insinuation of such soft Bodies as *Omentum* and *Intestine*.

HERNIA FORAMINIS OVALIS.

THE Descent of the *Viscera* through the *Foramen Ovale* of the *Os Pubis* (or as some call it the great *Foramen* of the *Ischium*) is another Species of *Hernia* first observed by the Moderns: the Case is rare, but it sometimes occurs. The Tumour in Men is formed near the *Perinæum*; in Women, near one of the *Labia Pudendi*: In both Sexes it lies on the *Obturator externus*, between the *Pectineus* Muscle and the first Head of the *Triceps Femoris*. It is generally said to be formed by the Relaxation of the Ligament and *Obturatores* Muscles,

Muscles, which fill up the *Foramen*; but it is now known, that the Ligament is ¹ deficient in one Part of the Circumference of the Bone, for the Transmission of some large Vessels, and that the *Viscera* insinuate themselves through that Deficiency, dilating it as they advance.

WHEN the *Intestine* is strangulated in this *Hernia*, the Symptoms are the same with those already described of the other *Hernias*, and require the same Treatment in order to reduce them. After the Reduction, a particular kind of Truss must be contrived, that may be accommodated to the Situation of the Tumor. But, if after a fruitless Attempt to reduce the *Hernia*, a Mortification should be coming on, the Operation must be performed in order to make way for the return of the *Viscera*; and should any one be enterprising enough to undertake it, he must dilate the Ligament from without inwards, the natural Defect of Ligament being in that Part of the *Foramen* next to the *Acetabulum* of the *Os Inominatum*; but I believe, hitherto no one has ever performed it in all its ² Processes.

¹ *Memoires de Chirurgie*, 709. Vol. I.

² *Memoires*, 715. Vol. I.

HERNIA VENTRICULI.

HERNIAS of the *Stomach* appear just under, or a little on one side of the *Cartilago Xiphoides*, in the *Linea Alba*, between the *Recti* Muscles. It has never been fully described till within these few Years; but now there are several Histories of this Case. It^s often happens upon lying down that the *Stomach* returns into its true Place, so that the Patient is easy in that Posture; but the continual Reachings, with other consequential Symptoms, which accompany its displacement, at length destroy him. The only Remedy necessary in this Disorder is a proper Bandage, which is always effectual.

HERNIA INTESTINALIS VAGINÆ.

THERE is another Species of *Hernia*, where the *Vagina* becomes so thin after much Child-Bearing, that it yields to the Impulsion of the *Intestines*, and admits of their descent below the external Orifice of the *Vagina*. This I presume is a very rare Case; but it is well worth attending to, because it may so naturally be mistaken for a *Prolapsus Vaginæ*. It has been

3 *Memoires*, 702. Vol. I. Arnaud's *Preface*, 32.

found

found by Experience, that the Application of a common *Pessary* is injurious, but one made of a globular Form fits easy, and supports the *Hernia* ⁴.

HERNIA CYSTICA : or *Hernia* of the Urinary Bladder.

THIS Disorder is a Descent of a Portion of the Bladder, either through the *Rings* of the Abdominal Muscles into the *Groin* and *Scrotum*, or else, under the *Ligamentum Poupartii* into the Thigh. It was first observed by *Johannes Dominicus Sala* ⁵ who lived about the Year 1520, but it never was much attended to till about the latter end of the last Century, when *Ruyfch* ⁶ published a History of this Case, and says he had met with one more such Instance. After him *Monf. Mery* ⁷ gave the History of three Cases which fell under his Observation. Since his Time, most Writers speak of the *Hernia Cystica*, and I believe at present, we are very well acquainted with its Nature and Situation.

THERE are various Proofs of the Existence of this *Hernia*, some taken from Incisions un-

⁴ *Memoires*, 707. Vol. I. ⁵ *Sepulchretum Anatomicum Boneti*, Vol. III. Observ. 18. ⁶ *Observ.* 98. *Centuriæ*. ⁷ *Histoire de l'Academie de Sciences*, 1713.

warily made into the Tumour upon the Supposition of its being a *Hydrocele*, when the Discharge of Urine has evidently pointed out the mistake; others, from Stones being found in the Tumor, an additional Evidence to the Evacuation of the Urine; and lastly others, from the Dissection of several Patients who have died under this Circumstance. It appears from these Examinations, that the *Hernia* of the Bladder may be either single, or complicated with a *Bubonocoele*; and that each of them may produce the other; that is, the *Bubonocoele* may sometimes precede and occasion the *Hernia Cystica*, and at other times be the Consequence of a *Hernia Cystica*.

To comprehend rightly the Nature of these two *Hernias*, it must be remembered, that the *Peritonæum* terminates at the inferior Part of the Bladder near to the Insertion of the Ureters, so that the *Fundus* of the Bladder, which by its Nearness to the *Rings* of the Abdominal Muscles is most exposed to the Protrusion, falls down first, and draws after it the *Peritonæum*; whereas when the *Bubonocoele* falls into the *Groin* or *Scrotum*, the *Peritonæum* precedes the *Intestine*, and forms the Bag which contains it.

IN the *Hernia Cystica* the Bladder insinuates itself between the *Peritonæum* and Abdominal Muscles, in order to push through the *Rings*; and if the *Hernia* be considerable, it will draw after it a Portion of the *Peritonæum*, which will form a small Bag, that opens towards the *Abdomen*; and it is from this Circumstance, together with the Dilatation of the *Rings*, that we may conceive, how a previous *Hernia Cystica* may conduce to the Invitation of a *Bubonocèle*. On the other Hand, when a *Bubonocèle* is large, and in an augmenting State, the continual Stretching of the *Peritonæum* may, by Degrees, draw down into the Tumor that Part of the Bladder where the *Peritonæum* is inserted, and in this manner produce a *Hernia Cystica*.

IN the simple *Hernia Cystica* the Bladder lies upon the Spermatic Cord; in the complicated *Hernias*, it lies between the *Bubonocèle* and the Spermatic Cord; and in both, the Bag of the *Peritonæum* lies upon the anterior Part of the Bladder. In recent *Hernias*, the Bladder is moveable, in old ones it generally adheres.

THE Symptoms of this *Hernia*, are a Tumor, with Fluctuation, which entirely subsides

fides when the Patient urines, who for that purpose is generally obliged to elevate and press the Swelling. If the Bladder is not much constricted by the *Rings*, the Patient can urine without compressing it. In Women, the *Hernia* appears sometimes in both Groins. In Consequence of the Pressure of a distended *Uterus*, which divides the Bladder into two ⁸ distinct Cavities, giving them by that Means a Disposition to enter through the *Rings*: though it is to be remarked that the *Rings* in Women are so narrow that the Bladder as well as the *Intestine*, in that Sex, much more frequently falls under the *Ligamentum Poupartii* into the Thigh.

IN Women the Bladder is liable to fall from its natural Situation by two more ways than those already mentioned: for there are some Instances, where it has insinuated itself between the *Anus* and *Vagina* in *Perinæo* ⁹; and others, where in a *Prolapsus Vaginæ* it has accompanied the *Vagina*, ¹ so far as to appear without the Body. The Knowledge of the Possibility of these Cases will be a useful Precaution against rashly opening Tumors of

⁸ Palfin's *Anatomy*, 152. ⁹ *Memoires de l'Academie Royale des Sciences*, 1713. ¹ Tolet, Peyerus, Ruysch. *Observ. Anat. Chir. Obs.* 1,

these Parts though there be an evident Fluctuation ; for if upon pressure, the Tumor recedes, it is most probably the Bladder itself, and the Incision will not only be needless, but perhaps dangerous.

It is now generally acknowledged that the *Hernia Cystica* is derived either from a Suppression of Urine, which distending the Bladder, and destroying its Tone, may render it flaccid, and so make it capable of passing through the *Rings* ; or else from the incumbent Weight of the *Uterus* in pregnant Women pressing it on each Side, as I have before mentioned ; but supposing the Bladder to be in a flaccid floating State ; it must still appear amazing how it should be forced through the *Rings*, as it does not seem circumstanced to make any Effort of that Nature : Was it indeed always complicated with a *Hernia Intestinalis*, one might readily conceive the Possibility of its being drawn down by the *Sac* of the *Peritonæum*, and it was the Difficulty of accounting for the Descent of the Bladder alone, which led *Monf. Mery* to impute the Accident to a preternatural Formation of the Parts. I confess that I myself 'till lately could not imagine, that the Bladder was capable of falling alone through the *Rings*, or under the *Ligamentum Poupartii*,

Poupartii, and had entertained an Opinion, it was always accompanied with a *Bubonocoele*, and that the Writers who have given us the Histories of the *Hernia Cystica*, had overlooked this Circumstance; but the ingenious *Monf. Verdier* ² has fully proved that the Conjecture is ill grounded.

THE Treatment of the *Hernia Cystica* turns upon this Circumstance: If the Bladder itself is reducible, a Truss will be proper to prevent the falling down of the *Hernia*: If the Bladder be adherent, a suspensory Bag only should be applied, because a Truss will not be effectual in obstructing the Distillation of the Urine into the *Hernia*, but by compressing the Bladder will be painful, and perhaps injurious. Should the *Hernia* be opened unwarily by a mistaken Operator, or should it be done purposely in order to evacuate the Urine, in consequence of an Inflammation, and a Stricture of the *Rings*; or lastly should it be necessary to make an Incision into it, in order to take away a Stone; in all these Cases it will be adviseable afterwards to keep a Catheter in the Bladder by which the Urine may continually be carried off, as it will greatly facilitate the Cure of the

² *Recherches sur la Hernie de la Vessie, Memoires de l'Academie Royale de Chirurgie. Vol. 2.*

Wound. The Trocar will be found the most useful Instrument, when only the Evacuation of Urine is required. In the Operation for the *Bubonocoele*, if it be complicated with a *Hernia Cystica*, great care must be taken not to cut away any Portion of the Bladder ; or should the Bladder by accident be opened, it must not be returned into the *Abdomen* (supposing it reducible) as the Discharge of Urine into the *Abdomen* would most probably be fatal.

THE *Hernia Cystica*, when it has passed under the *Ligamentum Poupartii*, must be treated in nearly the same manner. When the *Hernia* happens to be formed between the *Rectum* and *Vagina*, or when it falls down with the *Vagina*, it will seldom admit of any other Relief than returning it by Pressure, though if it be in either Instance the Consequence of Pregnancy, it may probably disappear after Delivery : and Examples are not wanting, where a Cure³ has been effected after the Extraction of Stones from a *Hernia* of this Part.

³ Ruysch *Obs. Anat. Chir. Obs. 1.*

C H A P. II.

H Y D R O C E L E.

I N the very Definition of this Disorder, I think the Moderns have all run into an erroneous Division, which cannot but confound a young Reader. They tell us there are two Species of *Hydroceles*, the one, by *Infiltration*; the second, by *Extravasation*: That kind of Dropsy which attacks the *Membrana Cellularis Scroti*, they suppose to be produced by *Infiltration*, and the other Collection of Water in the Membranes of the *Scrotum*, they ascribe to an *Extravasation*; but the Distinction seems to have no Foundation, either in Reason, or anatomical Dissections; for the Water lodged in the Cells of the *Membrana Cellularis Scroti*, is as evidently extravasated, as the Water which is contained in the Membranes of the *Scrotum*: So that the Circumstance of *Extravasation* is the same in both Cases. And as to the Term *Infiltration*, by which they intend to signify the Increase of the Distemper Drop by Drop, or, as they express it, by Distillation; this is likewise groundless, because the slowness of Augmentation is common

mon to both the Kinds, and therefore is improperly applied to the one in contradistinction to the other. And if the above-mentioned Distinction demands our Censure, I believe upon Examination it will appear, that the usual Descriptions of the Disorder itself are no less liable to Objection.

THE multiplicity of Seats ascribed to this Collection of Water in the *Scrotum*, is a Doctrine without Foundation, and has therefore always rendered the Study of the *Hydrocele* very perplexed: But to explain better the Falsity of this supposed Variety of Kinds, I shall first point out the true Seats of the Waters, when from their Collection in the *Scrotum*, they form the Distemper called the *Hydrocele*, or which is likewise known by the Name of *Hernia Aquosa*, *Hydrops Scroti*, and *Hydrops Testis*.

THERE are then but two Kinds of *Hydrocele*, the one, where the Water is lodged in the Cells of the *Membrana Cellularis Scroti*; the other, where it is contained within the *Tunica Vaginalis* of the Testicle, which last, in that Sense may be deemed an *Encysted Dropsy*; and in compliance with Custom, I shall also call it by that Name. In the first Case, the Disorder is generally complicated

with an *Anasarca* of the whole Body, where the Water is extravasated in the Cells of the *Membrana Adiposa*, of which the *Membrana Cellularis Scroti* is but a Continuation; so that the *Scrotum* in this Instance is only affected in common with the *Membrana Adiposa*; whereas in the *Hydrocele* of the *Tunica Vaginalis*, the Distemper is properly local, not only as being confined to that Part, but as it rarely implies any other Disorder. However there are Exceptions to what I have here laid down; for sometimes an adjacent Tumor, by compressing the Vessels leading to the *Scrotum*, occasions a *Hydrocele* of the *Membrana Cellularis*, independent of an *Anasarca*; and sometimes, a *Hydrocele* of the *Tunica Vaginalis* accompanies, and perhaps may be the Consequence of a Scirrhus or Cancerous Testicle.

IT is to be remarked, that the Water of the *Encysted Hydrocele*, for the most part preserves all the Properties of that Water which is constantly found within the Cavity of the *Tunica Vaginalis*, and is allotted to the Service of the Testicle; whereas the Waters lodged in the *Membrana Cellularis* are evidently a diseased Fluid, or at least, the Aqueous Parts of the Blood: From which Observation it may reasonably

reasonably be inferred, that the *Hydrocele* of the *Tunica Vaginalis* is nothing more than an accumulation of that Fluid, which is destined to lubricate the Testicle.

FROM what immediate Cause this Redundancy of the Fluid may arise, I will not take upon me to determine: Possibly, it may be owing to a Rupture or a Relaxation of the Secretory Vessels, or perhaps a Stimulus promoting a preternatural Secretion of the Fluid; or on the other hand, the Defect may be in the Absorbent Vessels, which have lost their Power of circulating the proper Portion of the secreted Fluid back again into the Blood, whence an Accumulation must necessarily ensue; but I say, these are Conjectures by no means to be depended on, though from the Examples we now and then see of the sudden Disappearance of this Disorder, where it has subsisted for many Years before, one would be inclined to suppose, that as the Waters in this Case are evidently carried off by the Exertion of the Absorbent Powers, they might also probably have been collected from a Defect in those Powers; but however unsatisfactory this *Rationale* may prove, I am persuaded, that the *Hypotheses* now in vogue, are far from giving us a better light into the Subject.

THE Doctrine of that Species of *Hydrocele*, which is seated in the *Membrana Cellularis Scroti*, seems to be universally the same ; so that the Difference of Opinion on this Subject relates merely to the Dropsy of the *Tunica Vaginalis* of the Testicle, which, instead of being confined to the Cavity of that Membrane, is by some ascribed, at one time, to the Cavity between the *Tunica Vaginalis* and the *Dartos* ; at another, to the supposed Cavity of the *Tunica Vaginalis* of the *Spermatic Cord* ; sometimes, to the Interstices of the *Laminæ* of the *Tunica Vaginalis* ; sometimes, to the Body of the Testicle within the *Tunica Albuginea* ; and lastly, to the Cavity of the *Tunica Vaginalis* of the Testicle ¹.

FROM this Catalogue of the several kinds of *Hydroceles*, which are admitted by some of the greatest Surgeons, I believe it will hardly appear credible, that most of them should be the Production of Fancy, and have no foundation but in the mistaken Opinions of their first Inventors. However I shall attempt to prove it, both from the unreasonableness of the Doctrine, and the little Argument they produce in support of it.

¹ Palsin, *Chap. of the Hydrocele.*

To begin then with the Examination of that ⁶ Collection of Water, which is by some said in general Terms to be formed in the *Scrotum*; or by others, more explicitly pointed out to be seated between the *Tunica Vaginalis* and the ³ *Dartos* Muscle. The first Remark I shall make upon this Subject is, that all those Writers who describe only this Species of *Hydrocele*, constantly ascribe the same Symptoms to it, as we do now to that of the *Tunica Vaginalis*: but what is still more observable, the Writers who admit of both, scarcely attempt to point out the Characteristics denoting the difference of the two Kinds.

Now can it be supposed, that two Distempers so essentially different from each other in their Situation, and consequently deriving their Origins from such different Orders of Vessels, should constantly be endowed with the same Appearances? Is it agreeable to what we see in the other Disorders of an animal Body? Does not a small Variation in the Seat of Distempers indicate sometimes widely different Criteria, and always such as are to be distinguished by a discerning Eye? Is it not then more probable, the Seat of the Disorder should

² Garengeot, p. 448. Vol. I.

³ Col. de Vilars, 178.

be mistaken, and there should be only one Kind, than that two Kinds should so exactly resemble one another ?

BESIDES, if this Case was common, (and there is as good Proof of its being common, as that it exists at all) we should have had undeniable Proofs of its Frequency ; since the great Application of Surgeons these last fifty Years, to the Study of Anatomy and the Dissections of Morbid Bodies, could not but have furnished the Cabinets of the Curious with a number of Preparations that would have put the Doctrine quite out of Dispute : But we see no such Preparations, and I think, read of no Dissections, that seem satisfactory as to this Point.

AND if it be admitted, that the Water of the *Encysted Hydrocele* is usually of the same Nature with that found in a healthy *Tunica Vaginalis*, which I believe is indisputable, it is reasonable to infer, that the Collection is derived from those Vessels on the Internal Surface of that Membrane, which constantly supply the Cavity with Water : And if this be granted, it will follow, that such Collections of Water must be always on the inside, where the Source is to be found ; and not on the external Part, where Nature has not assigned

assigned a proper Compages of Vessels for the Separation of such Fluid. And indeed from considering it in this Light, it appears to me almost as absurd to place these Waters on the outside of the *Tunica Vaginalis*, as in a *Hydrops Articuli*, (which is a preternatural Accumulation of the *Sinovia* of the Joint) to suppose the *Sinovia* is collected between the Ligaments and the Skin.

P E R H A P S it may be suggested by one conversant with these Writers, that I have omitted to mention what they esteem the most frequent Cause of this kind of *Hydrocele*, and which it may be supposed, will as well account for a *Hydrocele* on the outside, as in the Cavity of the *Tunica Vaginalis*; I mean the Descent of Water from the *Abdomen* into the *Scrotum*, where the Patient labours under an *Ascites* ⁴. It is true, most of them do impute it to this Cause; and there could not have happened a stronger Case in Point to convince the Reader how liable we are to be misled by Authority. An *Ascites* is so common a Distemper, that every Practitioner becomes a Judge of this Dispute, and I would then appeal to any Practitioner, whether in

⁴ Garengéot, 445. Dionis, 365. — Col. de Villars, 178.

the Multitude of *Ascites* he has treated, he remembers any of them to be complicated with an *Encysted Hydrocele*; or, in the few *Encysted Hydroceles* he has met with, he recollects a previous *Ascites*? I dare answer, few have met with this Complication, because, as I shall explain immediately, the two Cases will never occur together, unless where the two Distempers, by great Chance, happen to be formed independently the one of the other: And it would be extraordinary indeed, that the *Encysted Hydrocele* should begin to collect just at that Juncture the Waters of the *Ascites* were gathering: Yet rare as this Accident must be, we see Mankind so prone to imitate one another, that without considering the Truth of a Fact so very notorious, they still continue to assert what every Hour's Experience contradicts.

NEVERTHELESS I must here caution the Practitioner to distinguish between the *Encysted Hydrocele*, and the *Hydrocele* of the *Membrana Cellularis*: An *Ascites* is frequently accompanied with an *Anasarca*, and in that Instance the *Scrotum* becomes enlarged; but then it is not an *Encysted Dropsy*, which is the kind of Dropsy said to be formed by the Derivation of the Water from the *Ascites*.

WHAT

WHAT seems to have laid the first Foundation of this Error, was a mistaken Notion concerning the Origin of the *Tunica Vaginalis*, which the ⁵ old Surgeons imagined to arise from the *Peritonæum*, in the same manner that a Finger of a Glove does from the Cavity of a Glove, as is really the Case in a Dog: Indeed this Similitude was so apt to their Purpose, that they used it for illustrating the Anatomy of those Parts. Now, upon the Supposition of this Structure, the Water of an *Ascites* would naturally fall through the open Canal of the *Tunica Vaginalis* into the *Scrotum*, and therefore it is not wonderful, that People mistaken in their first Principles, should be misled into such an Opinion; but that the Doctrine should be preserved, and, contrary to all Experience, by those who deny this Communication between the *Scrotum* and the Cavity of the *Peritonæum*, is less excusable; tho', to say the Truth, nothing is more common in Science, than to retain the Inferences from false Principles, after the Principles themselves are exploded.

BUT there is another Circumstance attending this Fall of the Water from the *Abdomen*

⁵ By the old Surgeons, I mean those who flourished in the three last Centuries; and by the Moderns, those of the present Age.

into the *Scrotum*, which has not been sufficiently regarded ; and that is the immediate Consequence, that every such *Hydrocele* must be a Dropsy of the *Tunica Vaginalis*, since it is the only Part of the *Scrotum* into which the Water could enter from the *Abdomen*, according to the above supposed Texture of these Organs. And *Hildanus* was so clear in this Point, that he not only places the *Hydrocele* within the *Tunica Vaginalis*, but, before he made an Incision to discharge the Water, he⁶ passed a Ligature round the upper Part of the *Tunica Vaginalis*, and tied it, with an Expectation of preventing a future Fall of Water from the *Abdomen* into that Bag : But the Moderns have not perceived how necessarily one Part of their Doctrine falsifies the other.

YET, it must be confessed, there is in Nature such a Disorder as a watry Tumour either in the *Groin* or *Scrotum*, which may be derived from an *Ascites* ; but the Case is very rare, and when it happens, is widely different from the *Hydrocele* we are treating of. It is peculiar to those *Ascites*, which by chance are complicated with an old *Bubonocoele*, where, tho' the *Intestine* be supported within the *Abdomen*, the *Herniary Sac* remains adherent without : In

Consequence of which, the Water of the *Ascites* flows into the *Herniary Sac*, and forms this Species of *Hydrocele*. But this Case is so far from aiding the general Opinion of the Descent of the Water into the *Scrotum*, that it rather proves it cannot fall but with a Portion of the *Peritonæum*; which, in the common *Hydrocele*, I believe no one pretends to accompany the Water.

I FLATTER myself I have said enough to shew, there is not any Demonstration of the Existence of this Species of *Encysted Hydrocele*, which is supposed to be formed between the *Dartos* and the *Tunica Vaginalis*. But, as I am aware how difficult it is to dispossess ourselves of Opinions, that have never before been doubted, I might in this Place produce some Examples to illustrate how little the universal Reception of a Doctrine is a Proof of its Infallibility: However, I shall only mention the two famous Cases of a *Tympany* in the *Abdomen*, and a *Pneumatrocele* in the *Scrotum* or *Inguen*, which, after having been admitted for so many Centuries, to be distinct Disorders of those Parts, are now, by the most able Practitioners, supposed to be imaginary; the *Ascites* having been mistaken for the one, and the *Hernia Intestinalis* for the other.

PERHAPS

PERHAPS, to this inquisitive Age, it may appear surprising, that for so long a course of Time, no one should have detected the Falsity of this Opinion: But it was the Fatality of those Days, that Physicians and Philosophers believed the Bounds of Science were fixed, and all they studied was, how to accommodate their own Opinions to those of *Hippocrates, Aristotle, Celsus* and *Galen*. It is no Wonder then, whilst this Humour prevailed, that any particular Mistake should, under the Sanction of these great Men, be transmitted to Posterity; and it is certain, this very Doctrine is one of those Instances; for we read in *Celsus* so ample and distinct an Account of this supposed *Hydrocele*, that I cannot but look upon all the subsequent Descriptions of Writers since him, as so many Copies of that one Original. I believe I shall be pardoned, if I give the Reader an Extract of what *Celsus* has advanced on this Subject, especially, as it is so apt to the present Enquiry, and also, because some eminent ⁸ Authors entirely misapprehend him, particularly in those fundamental Points, the Anatomical Discriptions of the Parts.

HE says, there are three Coats of the Testicle, viz. the *Elthyroides (Tunica Vaginalis)* and

⁷ Cels. Cap. 18.

⁸ Fab. ab Aquapendente, 271.

the *Dartos*, which two he supposes peculiar to each Testicle ; and the *Scrotum*, which is common to both. But in the Explanation of the different Disorders of the *Scrotum*, he more generally distinguishes the Membranes by their Situation ; for Example, the *Tunica Vaginalis* he calls the *Tunica ima* ; the *Dartos*, *Tunica media* ; and the *Scrotum*, *Tunica summa*.

IN his description of the *Hydrocele*, he says, there are two kinds ¹ of it between the Membranes of the *Scrotum* : One of them he places between the external and middle Membranes ; the other, between the middle and internal Membranes. The Characteristics of the two, plainly denote the one to be the *Anasarca* of the *Scrotum* ; the other, the true *Hydrocele* of the *Tunica Vaginalis* : But he ascribed the seat of the last kind, to the Vacuity between the *Tunica Vaginalis* and the *Dartos* ; and I believe, by this Mistake, established the Error, which has prevailed ever since, in regard to the Doctrine on this Subject. And yet it is evident, that he was also apprised of the Dropsy of the *Tunica Vaginalis* (though he sometimes mistook its Situation, supposing it to be placed between the *Dartos* and *Tunica Vaginalis* ;) for he not only mentions it in the description of

¹ Vol. 2. Page 457.

the *Hydrocele*, but, in his ² Method of Cure, expressly directs us to perform the same Operation if the Water be contained under the *Tunica Vaginalis*, as if it lay between that Coat and the *Dartos*. Indeed, his Description is short; but still, there are very few Writers since *Celsus*, who speak so distinctly of this Species of *Hydrocele*. They have unfortunately overlooked that part of his Doctrine which is true, and copied that only which is false.

I SHALL dismiss the Examination of this Species of *Hydrocele*, with observing, that though the *Dartos* is spoken of with so much Familiarity, that one would imagine it was a considerable Muscle, yet there are some Anatomists, who even deny its Existence; and the most accurate discover it only in plethoric Bodies, where its Fibres are spread thinly on the internal Surface of the *Scrotum*, and by no means answering to the Idea of a compact Substance fit to contain a Quantity of extravasated Water. Though, in Extenuation of what the Ancients teach on this Subject, it may be remarked, that they were permitted to dissect Brutes only, and were misled into this formal Doctrine of the *Dartos*, by the *Panniculus Carnosus*, which is a large Muscle found in most

Animals, immediately under the Skin in many Parts of their Bodies.

THE next Enquiry I make, shall be into that kind of *Hydrocele*, which is said to possess the *Tunica Vaginalis* of the *Spermatic Cord*. It has been already observed, that the internal Coat of the *Tunica Vaginalis* of the Testicle, is, in its upper Part, connected very closely with the *Spermatic Cord*, so as to form a distinct Bag for the Testicle. This Insertion of the upper Part of that Bag is by the Moderns, as I have before taken notice, considered as a *Septum*⁹ dividing the *Tunica Vaginalis* into two Cavities, the upper one being called the *Tunica Vaginalis* of the¹ *Spermatic Cord*, the lower one, the *Tunica Vaginalis* of the Testicle.

² Now it is generally asserted that the *Hydrocele* may be produced in one or the other of these Cavities, or sometimes, in both; and there are Rules laid down for distinguishing when³ the Water possesses the upper Cavity, and when the lower: Nay there are some, who seem to believe that the Water is⁴ collected in the upper Cavity first, and that when there is any Collection in the lower Cavity, it

⁹ Dionis, 364.

³ Dionis, 364.

¹ Ibid.

² Col. de Vilars.

⁴ Garenggeot, 455

is owing to a Rupture of the *Septum*, which opens a Communication from the upper Portion of the *Tunica Vaginalis* into the lower. It may perhaps deserve our Notice, that the Doctrine of this Species of *Hydrocele* is of modern Invention, and wanting that Stamp of Authority, which is sometimes derived from Antiquity, it is not taught in the same Terms by different Writers, nor conceived of in the same manner; though in general, they consider the *Tunica Vaginalis* of the *Cord*, as a loose Sheath, like the *Tunica Vaginalis* of the Testicle; and in the *Hydrocele* of the upper Part, they apprehend the Water is contained in one large Cyft, as it is in the *Tunica Vaginalis* of the Testicle. But some of ⁵ them admit, that when there is Water collected in the upper Part, it is not contained in one Cavity, but in the Cellular Substance of the *Tunica Vaginalis* amongst the *Spermatic Vessels*; and they grant, that in order to empty it, an Incision should be made the whole Length of the Tumor into the Cellular Substance, as a Puncture by the Lancet or Trocar would be insufficient.

I AM inclined to believe, that the longitudinal Shape of some *Hydroceles* gave rise to

this Opinion ; for when it was considered, how low in the *Scrotum* the upper part of the *Tunica Vaginalis* of the Testicle lies, it hardly appeared credible, that by a Collection of Waters within the Cavity, it should be elongated to so considerable a Height in the Groin : And hence arose the Distinction⁶ amongst some, that, if the *Hydrocele* be round, the Water is in the *Tunica Vaginalis* of the Testicle ; if it be longitudinal, it is in the *Tunica Vaginalis* of the Cord.

I WOULD not however be misunderstood so far, as to have it imagined, I dispute the Possibility of a watry Tumor or Tumors forming in this Part. It must be granted that the *Tunica Vaginalis* of the *Spermatic Cord* is not exempt from the common Fate of every other part of the Body : It is subject to Diseases of different Appearances, and, amongst others, to small Collections of Encysted Water between the *Laminæ* of its Membranes : But by what I can learn, in no degree peculiar to itself. I have myself seen two or three such Cases, and I have read of one or two more : If such rare Appearances as these may be deemed a *Hydrocele* of the *Tunica Vaginalis* of the Cord, I shall not oppose it ; but what I con-

⁶ Dionis, 64.

tend for is, that those *Hydroceles*, which occur in Practice every Day, and are many of them ascribed to this Part, are falsely so ascribed, being generally, if not always, *Hydroceles* of the *Tunica Vaginalis* of the Testicle; and I will be bold to say, that a Man who does not look for such an Appearance will never find it; since one of the ablest Surgeons in *Europe* confesses, that notwithstanding he has carefully enquired for this Species of *Hydrocele*, he has never met with one Example of it, amongst the great Numbers of *Hydroceles* that occurred in his Practice ⁷.

I SHALL now examine the two remaining Species of *Hydroceles*; I mean that *Hydrocele*, which is said to be formed between the *Laminæ* of the *Tunica Vaginalis* of the Testicle, and that which is supposed to be placed under the *Tunica Albuginea*. Neither of these are pretended to be common by those Writers who mention them; nay, so far from it, that the Possibility of the two kinds seems to be supported chiefly by the Histories of two or three single Cases: The first is related by *Garengéot*, of an ⁸ eminent Surgeon who was obliged, in a certain Instance, to employ the Trocar twice, in order to empty the *Scrotum*, which

⁷ Heister, 842. ⁸ *Garengéot*, Tom. 1. *Observ.* 29. 2d Edit.

Garengeot ascribes to the Water being collected in two different Cysts between the *Laminæ* of the *Tunica Vaginalis*: And what confirmed him in this Opinion, was a second Operation, performed by the same Surgeon on the same Patient some time after, when the whole Quantity of Water was evacuated by one Puncture; the absolute Evacuation of the Water at that time by one Orifice, being imputed to the Rupture of the *Septum* between the two Cysts.

THUS we see a mere Accident in one particular Operation, performed many Years ago, brought as an Argument for this Doctrine. I think I need not scruple to call it an Accident, since, if it was owing to the Cause which they suggest, we should not be under a Necessity of recurring to a single History, but from the Multitudes that are every Day Tapped, we should have continual Instances of the same Nature under our own Eyes. Besides, the whole weight of this Argument turns upon the Reasonableness of *Garengeot's* Solution of the *Phænomenon*, which, at least, is far from being a Demonstration of what he advances; since an Advocate for the *Hydrocele* of the *Tunica Vaginalis* of the *Spermatic Cord*, might, with as good Foundation, produce

the same Example for an Illustration of his Doctrine.

⁹ THE second Case is given us by *Le Dran*, but, I believe, whoever considers how complicated that Case is, will hardly be convinced of the commonness of the *Hydrocele* between the *Laminæ* of the *Tunica Vaginalis*, from that History.

THE third Case ¹ regards the Dropsy of the Testicle, and, I think, is no less satisfactory in regard to the Doctrine it is designed to establish. But whatever want of Proof there may be of the Existence of this latter kind of Dropsy, it is not wonderful the Notion of it should prevail, when, amongst other great Authors who mention it, *Fabricius ab Aquapendente* speaks of it with the same Peremptoriness, as he does of the other kinds ².

I KNOW not whether I have succeeded in my Attempt to refute the above supposed Variety of *Hydroceles*; if I have not, I shall beg leave to call in the Authority of these very Writers, upon whose Doctrines I have animadverted; for it happens, that every thing I have asserted, is maintained, at least Negatively, by one or another of them, though each upon the

⁹ *Le Dran's Observ. Vol. 2. Page 139.*

² *Fab. ab Aquapendente, 68.*

¹ *Dionis, 365.*

whole runs into the generality of these Errors. For Example, The *Hydrocele*, between the *Dartos* and *Tunica Vaginalis*, is mentioned by *Garengeot* and *Col de Vilars*; but is denied (if Silence be a Denial) by *De la Fay* and *Le Dran*. The *Hydrocele* of the *Tunica Vaginalis* of the *Spermatic Cord* is asserted by *De la Fay*, *Col de Vilars*, and *Garengeot*; but *Le Dran* omits the mention of it, and even *Garengeot*³ himself describes it, as a different Disorder from the others. Again, *Le Dran* and *Garengeot* speak of the *Hydrocele* between the *Laminæ* of the *Tunica Vaginalis*, but *De la Fay* takes no notice of such a Species: On the other hand, *De la Fay* supposes the Possibility of a *Hydrocele* of the Testicle, and *Le Dran* makes no mention of it. Thus we see, that all I have laid down, singular as it may appear, is to be gathered separately from their own Writings, a Circumstance, which cannot but weigh very much in favour of the Arguments I have produced.

I HAVE now run through the Examination of the Reality of these several kinds of *Hydroceles*, and one would expect, there should remain no farther Subject for Criticism on this Distemper; but in my Opinion, their Idea of

³ *Garengeot*, 454.

the true *Hydrocele* of the *Tunica Vaginalis* is almost as false as the Notions I have already combated : For, instead of simply considering the *Tunica Vaginalis* as a Bag distended by an Accumulation of Water, they seem many of them to conceive, that the Water is collected in an adventitious Cyst, in the same manner as ⁴ we find in an Encysted Dropsy of the *Abdomen*.

⁵ IT is true *Garengeot* admits, that the Water may be collected in the manner I suppose it to be usually done ; but then he speaks of it as an extraordinary Phænomenon, and which he should have esteemed *a Fable*, if he had not once met with an Instance himself, when, upon opening a *Hydrocele* the length of the *Scrotum*, he found the Testicle in the same Cavity with the Water.

LE DRAN ⁶ says positively, that this Species of *Hydrocele* is a Tumor or Bladder filled with Water, and placed upon one of the Testicles to which it is adherent ; but he, and *Garengeot*, and *De la Fay*, all three of them, in their Description of the Operation for the radical Cure, plainly shew they are of this Opinion ; for they recommend such a rough Treatment of the Cyst, as would be by no

⁴ Le Dran, 179.

⁵ Page 450.

⁶ Page 177.

means suitable, supposing it to be the *Tunica Vaginalis*, nay, I think, from their manner of cutting and tearing, and even tying it all round with Ligatures in order to extirpate it⁷, the Testicle itself would be often destroyed : And therefore this particular Mistake as to the Nature of the Cyst, is of a more mischievous Tendency than any other I have observed upon ; because it not only misguides Surgeons in their Speculations, but may fatally mislead them in their Practice.

YET however I may condemn the practice of tearing away the Cyst, as needless and cruel, nevertheless I must own, it becomes a Consideration of great Importance to determine, whether a mere Incision through the Skin and *Tunica Vaginalis* be sufficient, or whether the cutting away a Portion of the *Sac* be adviseable. It is true, the Operation in the second Method is more severe ; but as the Cicatrix will be larger, it is probable the Patient will be less liable to a Relapse, which happens, though very rarely, after a simple Incision : besides, when a quantity of *Tunica Vaginalis* is cut off, the remaining Portion which inflames and suppurates after the Operation, will possibly excite a less symptomatic

⁷ Garengeot, 471. Le Dran, 182.

Fever and fewer Abscesses, than if the whole *Tunic* was left to inflame and digest: On this account, perhaps the Excision of an oval piece of Skin and *Tunica Vaginalis*, will always be found more eligible than the simple Incision, and where the *Hydrocele* is of a great Bulk, absolutely necessary. I have done it in three or four Cases where the *Tunica Vaginalis* was enormously distended with fleshy Concretions exactly resembling those we find in the Interstices of the Muscles near an old *Aneurism*, and, which I make no doubt, were likewise a grumous Blood changed by its long continuance in that State of Extravasation. It is a Disorder spoken of by various Writers under the Title of *Hæmatocele*, though I do not know that any of them have described it with the Circumstances I have mentioned, but rather as a bloody Water, or at least, a fluid Blood; and therefore it may not be amiss to inform the Reader, that the Fluctuation in this Species of *Hæmatocele* is so very obscure, that without some Attention, it may be mistaken for a scirrhus Testicle.

THE Maxim of cutting away a great quantity of the Teguments, in order to effect a radical Cure, is very old. *Celsus* recommends it,
and

and what is particular, makes no mention of the Palliative Method, (Tapping) but speaks of the Excision, as though it was the common Practice of those Times; The Moderns too speak of it very familiarly, and yet I suspect this Operation has not been performed often by any one of these Writers; for if they had frequently practised it, we should have had a great number of the Histories of these Cases: We should likewise have been informed of the different Success from the use of Caustics and the Knife, both of which are recommended for the radical Cure; but there are few or no accounts of this Nature. Besides, in the general Prescription laid down for the Operation, we have no Caution in regard to that remarkable Symptomatic Fever, which seldom fails to precede the Suppuration of the *Tunica Vaginalis*, and indeed, sometimes rises so high, as to give very great Alarms, though I have never yet seen it prove fatal. It is the Nature of Membranes to digest with more Difficulty than the fleshy Parts, of which this is an eminent Example; for in the very Operation we are treating of, the Fever attendant upon it, is often much more terrible than that which ensues even after the Extirpation of a large Testicle.

Now

Now, had the Authors who advised this Operation been accustomed to it, they could not have omitted to mention so material a Circumstance. *Garengeot* indeed, tells us of a Case, where bad Symptoms arose after the Application of a Caustic, though he very injudiciously ascribes them to the Salts of the Caustic poisoning the Water of the *Hydrocele*. *Hildanus*, I confess, is more particular in the recital of this Consequence, though he was not aware, that it would naturally follow, but imputed it in his Patients to their ill State of Body (*pravis humoribus referti erant* ⁸.) And I should do an Injustice to our *English* Writer, *Wiseman*, if I did not remark in this place, that he seems much better apprised of the Nature of this Operation than any one I have met with ; though his Hints upon this Subject have been overlooked by later Authors. Perhaps, there may also have been some notice taken of it by others, which has not occurred to me. Upon the whole, it appears to me from what I can learn in the Writings I have examined, that there are not yet a sufficient quantity of Observations to establish an unexceptionable Method of performing this Operation : That of tearing

8 Obs. 65. Cent. 4.

away

away the *Cyst* with the Fingers is undoubtedly to be rejected ; but whether under the Notion of its being an *adventitious Bag*, the Advantages from cutting away a Portion of the *Tunica Vaginalis* will, in the generality of Cases, compensate for the Pain, and give it a preference to the simple Incision and Caustic, must be decided by a number of Experiments, though as I mentioned before, I am at present inclined to that Opinion.

C H A P. III.

S A R C O C E L E.

THE Testicle, like other Parts of the Body, is subject to Inflammations, terminating either by Discussion or Suppuration ; and the Enlargement of the Testicle under this Circumstance, is called a *Hernia Humoralis*, whether it be a critical Tumor, or the Consequence of a Venereal Affection. This kind of *Hernia* is so fully treated of by most Writers, that I shall make no Observation on it ; but that Species of Swelling, which is known under the Name of *Sarcocoele* or *Hernia Carnosa*, is a Subject, which I believe is not only ill described, but absolutely misunderstood : I shall therefore examine into the History

tory of this Disorder, and endeavour to put it in a clearer Light than we yet see it.

THE *Sarcocele* ⁹ is said to be either a Tumor of the Testicle itself, or ¹ a Tumor growing on the Testicle, formed, as they express it, by vicious Juices which change into Flesh. The first Description, answers to what we now call a scirrhus Testicle, and in that Sense is proper ; but the second is a mistaken Case ; for that, which they suppose to be an adventitious Swelling, or an Excrescence, is really an Enlargement and Induration of the *Epididymis* ; and here it is, their Accounts are imperfect ; for not knowing this Circumstance, they have confounded the Natures of the two Species of *Sarcocele* ; and supposing them equally malignant, they have in consequence sometimes acted, not only with a needless but a fatal Severity.

WHOEVER is curious to look into the most eminent ² Authors, will find the Caustery, the Caustic, or the Knife, every where recommended for this supposed Excrescence ; and, I believe, he will not meet with the least Suggestion that this Species of *Sarcocele* is of a milder nature, than that, where the whole

⁹ Heister, 837. Parey, 211. ¹ Col de Vilars, 315. All Authors.
² Heister, 840. Le Dran, Obs. 72.

Body of the *Testis* is scirrhus: To explain therefore in the best manner I am able, the different Natures of these *Sarcocoeles*, it must be remarked, that the Testicle is composed of two distinct Parts, the one Glandular, which is the Body of the *Testis*, the other Vascular, which is the *Epididymis*, and what is generally believed to be the beginning of the *Vas deferens*: Now the Scirrhus, which attacks the body of the Testicle, is usually a cancerous Disposition; the Scirrhus, that falls on the *Epididymis* only, seldom or never so. It is sufficient, that Experience verifies the Observation, for in all probability the immediate Cause of so essential a difference, in Tumours of equal Hardness, may never be exactly known. We know however, that there is a Propensity in most Distempers, to manifest themselves in particular Parts of the Body, and we sometimes have not a better Guide than the Seat of the Disorder, to influence our Opinion on the Nature of the Disorder. Thus a Scirrhus of the Breast or *Testis*, inclines us to suppose a cancerous Disposition; the same Degree of Scirrhus in the Glands near the Jaw, a scrophulous Poison. Many more Instances of this kind might be pointed out, but these may suffice to illustrate the Possibility of a much more innocent Disposition

position in a Scirrhus of the *Epididymis*, than in a Scirrhus of the Testicle itself.

BUT if our Theory is defective in this Article, Practice will always evince the Truth of the Assertion. Indurations of the *Epididymis* may resist all the Methods of Discussion, and remain scirrhus, or perhaps suppurate; but they will never become cancerous, whilst the glandular Part of the Testicle is sound, and therefore will not demand Extirpation, as is generally recommended upon that Presumption. On this account they are always to be treated with Patience; for in length of Time the most stubborn are often subdued, and not only Health and Life less hazarded, but also the Faculties of the Organ preserved.

WRITERS however have been so little apprised of the Distinction I have made, that there are scarcely any of them who in their Accounts of this Disorder even mention the *Epididymis*, much less that the *Epididymis* itself is the Part diseased; at least, it is chiefly, if not altogether, after a *Hernia Hemoralis* that they admit the *Epididymis* to be the Seat of the *Sarcocoele*: And in that Instance, the most eminent³ amongst them recommend the Extirpation

of the Tumor, in case it should not yield to the proper Application ; so that the most considerable Improvement ⁴ made by the Moderns in this Article, is the Preference given to the Knife, over the Caustic or Cautery, as advised and practised by the old Surgeons.

I BELIEVE some of the Moderns flatter themselves, that they have mitigated the Cruelty of the Operation for this Species of *Sarcocoele*, in confining the Extirpation to the Excrescence, instead of Castrating ; but it is certain, the Ancients also followed this Practice ; for though *Celsus* does not seem to speak with his usual Clearness on the Nature of the Disorder he treats of in his 19 *Cap. de Curat. Testi* : yet by the Processes of the Operation, I am inclined to think, he must mean some Species of *Sarcocoele*, or more probably the *Circocoele*, (where the *Epididymis* is usually affected, as I shall describe presently) and he very distinctly points out the manner of cutting away the diseased Parts, and preserving the Testicle. Perhaps too, that Description which we may esteem obscure, might from Circumstances we are not acquainted with, be intelligible and familiar to his Contemporaries. *Paulus Aegineta* ⁵ proposes likewise this partial Ampu-

⁴ Heister, 841.

⁵ Page 300.

tation, so that the Notion, however popular, is ill grounded. What possibly may have laid the Foundation for this Opinion, is the Doctrine of *Fabric. ab Aquapendente* ⁶, who really does recommend Castration, for which he assigns this Reason; That he once saw a Testicle that was rotten within, though it was extremely sound in its outward Parts. *Fab. ab Aquapendente* having proposed this Method, a Reader might be naturally inclined to imagine, it had also been proposed by the Ancients; but the Fact is not true; though by the way, this is not the only Instance of a Degeneracy of Practice betwixt the Times of *Celsus*, and *Fab. ab. Aquapendente*.

I SHALL close this Essay on the Importance of distinguishing between an Induration of the *Epididymis*, and an Induration of the *Testis*, with observing, that though it be an Instruction with the best Writers, to extirpate the Excrescence only, yet, as it often happens, that the *Epididymis* is so monstrously enlarged as almost to surround and envelope the whole Body of the Testicle, Surgeons are apt to proceed to Castration, from a Persuasion that too much of the whole is diseased to attempt

the Preservation of a Part ; and I am of opinion, nothing can effectually guard us from this Error but the Doctrine I have inculcated, *viz.* That this supposed adventitious Tumour is a *Scirrhus* of the *Epididymis* ; and that a *Scirrhus* of the *Epididymis*, is not to be despaired of, like a *Scirrhus* of the Testicle.

NEVERTHELESS, I would not have it understood, that a *Scirrhus* of the *Epididymis* cannot possibly degenerate into a Cancer, since, no Part of the Body is absolutely exempt from this Consequence. Indeed Cancers of the *Epididymis*, are usually attendant on Cancers of the Testicle ; but in this Case, it is to be remarked, that the Poison is spread by Infection, and not derived from the natural Tendency of *Scirrhuses* of that Part.

I SHALL now enter into the Consideration of the *Circocele* and *Varicocele*, Distempers we very seldom meet with, but which are still spoke of by all Writers with as much Familiarity as though they occurred every Day. The *Circocele*, is described to be a Dilatation of the Vessels of the *Spermatic Cord* ; the *Varicocele*, a Dilatation of the Veins of the *Scrotum* ; neither the one, nor the other, are supposed to be painful, nor, as I find, to be dangerous in the Event ; but the Caustery,

or the Knife, are every where recommended ; and here, as in the *Sarcocoele*, some of the Moderns falsely ascribe to themselves the sole Honour of employing the Knife, where the Ancients used Fire ; but I believe, very few People have submitted to either of these Methods : For, notwithstanding the Positiveness of the Rule, we have no Histories of Cases where the Rule is authorized by Example ; and, I think, had such an extraordinary Proposition been carried into Practice, the Issue of it would somewhere have been recorded.

WITH regard to the *Varicocoele*, I believe it is scarcely ever seen, but where it is complicated with the Tumor of the *Scrotum* ; and in this Instance, the Dilatation of the Veins, is a Consequence of the Enlargement of the Part, and an Attempt to remedy a Disorder without removing the immediate Cause of it, would answer no Purpose, and therefore, I presume, has never been put in Execution : It is possible indeed, that an independent *Varicocoele* may have existed, but I am rather inclined to believe, that as Surgeons have seen it attendant on another Complaint, they have imagined it might also appear alone ; however it has been described by Writers, in all Ages
from

from the Time of *Celsus*, who speaks of it under the Head of *Circocele*, though he does not use the Appellation itself.

A N Induration and Enlargement of the *spermatic Cord*, is a common Circumstance in *scirrhus* Testicles, and in this Sense a *Circocele* is a common Distemper; but the Disorder generally described under the Title of *Circocele*, is an Affection of the *spermatic Cord*, when the Testicle is supposed to be healthy, and indeed, to the best of my Judgment, where the Vessels are in a soft, though an enlarged State. I have already observed, that the Symptoms of this Illness, are not represented in such Terms as should seem to require the Operation recommended, nor indeed any violent Method of Cure; but I have two or three times met with a painful Induration of the *spermatic Cord* between the Testicle and the *Abdomen*, which has very much alarmed me: However, in all the Instances, a Cure was effected by the use of Fomentations, and an Application of the Mercurial Uction, with gentle Purgatives every third or fourth Day.

THE true *Circocele*, or that, which is generally understood by this Name, feels like the *Omentum* in the *Scrotum*; but from a more

accurate Enquiry, one may discover the Vessels to be turgid and a little tortuous. The *Epididymis* is usually flaccid and unequally soft, giving the Idea of a loose congeries of large Vessels, rather than of a compact Substance. It is likewise often something increased in its Bulk, drawing the Testicle down a little lower than the other; but with all this change of Texture I have never but once seen any Inconvenience result from it: This was in the end, a gradual wasting of the Body of the Testicle without Pain, which at length was diminished to the Size of a Hazel-Nut. I suppose there are but few Examples of this nature; for I don't know of any Writer who has mentioned such a Case except ⁷ *Celsus*, who describes it as the Effect of a *Circocele*.

I HAVE formerly put in practice several Methods for restoring a due Tone to the Vessels affected by a *Circocele*, but without Success: I suppose the Ancients may likewise have attempted it in vain, which probably led them to the recommendation of so severe a Treatment as the Cautery or Knife: But if it is our Misfortune that we cannot relieve the Malady by Medicine, on the other hand, it

⁷ *Celsus*, 459.

happily is seldom followed with any fatal Circumstance, or really, any other Inconvenience than the Dispiritedness which People are subject to, who labour under any Species of secret Disorders. However, it is not impossible that a *Varix* of these Vessels may sometimes be as painful as a *Varix* of any other Part of the Body. I have seen a Case, where the *Cephalic* and *Median* Veins in the Bend of the Arm were *varicous* for near two Inches in Length, and so extremely painful that the Patient could find no Relief, till I cut them quite away: But painful *Varices* are mentioned by all Surgeons, and I would not have spoke of this Case, but to illustrate the Possibility of the same Symptoms in a *Circocele*. Such a Circumstance as this, might make it reasonable to extirpate the *varicous* Vessel or Vessels, or even the *Epididymis*; but I think, nothing less could ever have induced either the Patient, or the Surgeon, to so dreadful a measure, unless we can suppose that the *Romans* carried their Notions of Delicacy so far, as to suffer any Pain for the removal of this Disorder; though indeed, it would not have been much more extraordinary, than the Operation for the Cure of a natural *Paraphymosis*, which ⁸ *Celsus*

⁸ Celsus, 471.

insinuates they sometimes submitted to in his Time, from a pure Motive of Decency.

I HAVE thus far examined into such Maladies of the Testicle as do not require Castration : There are others, where the Operation is necessary ; but I believe, those may be limited to a *Cancer* and a *Scirrhus*, which is also a *Cancer* in its first Stage ; for neither an Abscess nor a Mortification, if properly treated, do require this Process ; Abscesses of the Testicle are so common and so manageable, that one would wonder the Necessity of Castration should ever have been suggested ; and yet some of the ablest Surgeons do still admit the Propriety of it in certain Abscesses, by guarding against it in others. When we are told that some Abscesses of the Testicle have been seen to do well from an Opening, we are instructed by the Observation itself, that there are others which do not yield to this Treatment, and are consequently led to castrate where the Abscess appears to be difficult of Cure. As to a Mortification, if it penetrates only to the *Tunica Vaginalis* (which is no uncommon critical Disorder) the Extirpation would be absurd : And if it even reaches to the Body of the Testicle, it would be needless ; because Nature will perform

perform the Separation of all the mortified Part with the greatest Exactness, and with little Pain or Danger. Castration therefore in every degree of a Gangrene, seems to be improper.

IT remains now to be considered, in what Circumstance of a *Scirrhus*, the Operation will be adviseable ; for it is not always a sufficient Motive, that the Tumor has hitherto resisted every other means of Relief, though this is the Rule laid down by most Writers. There are *Scirrhuses*, which remain in an indolent State for many Years, neither increasing in Bulk, nor producing any Disorder ; nay, there have been Examples where in length of Time they have subsided. On these Accounts, I should think, a *Scirrhus* in such a Situation, is to be left 'till an alteration of Symptoms calls for our Assistance. I am aware it will be suggested, that we ought to pitch on that Season for the Amputation, when the Tumor is small, when the Distemper is not (as they suppose) deeply rooted in the Blood ; and lastly, when the Strength of the Patient is not impaired by the force of the Disease ; but this Reasoning, however specious, is not conclusive. Experience has shewn, that the Operation under all these

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Circumstances will often be fatal : Sometimes, after the Operation, the Wound itself proves Cancerous, and sometimes, the cancerous Poison falls on some other Part of the Body ; in both which Cases, the Patient is frequently carried off with the utmost Rapidity. The dreadfulneſs of this Event, after the Extirpation of a ſeemingly ſlight *Scirrhus*, and where the Perſon might probably have lived ſome Years without the Operation, has, I ſuppoſe, deterred ſo many Surgeons from the Amputation of every Species of *Scirrhus* whatſoever, and led them to paſs that frightful Sentence upon them all of *Noli me tangere*. But though the Operation is not haſtily to be undertaken in every State of a *Scirrhus*, yet in ſome Inſtances, it not only is an immediate deliverance from Death, but frequently proves a radical Cure : I would therefore inculcate, that no *Scirrhus* is ſo trivial, but that the Operation may have a fatal Conſequence, and no Cancer is ſo malignant but the Event may be ſucceſsful. On theſe Accounts, Caſtration is never to be recommended without an urgent Motive, nor to be deſpaired of, though in the laſt Extremity of the Diſeaſe.

PERHAPS

PERHAPS these Maxims may appear a little contradictory, that the Operation should so often be pernicious in a gentle degree of the *Scirrhus*, and yet sometimes, be salutary in its greatest Malignity : I own, it is a Secret I do not comprehend the reason of ; but I think I can say from Experience, it is a Fact, and that Relapses after the Operation, arise from Causes so much above our Knowledge, that we have no exact Criterion to lead us in our Prognostics : Nevertheless, I do not assert, that a mild *Scirrhus* is altogether so subject to return as a Cancer ; but still I think, whilst it gives no trouble, either by its Painfulness or Weight, the Extirpation should be postponed ; because the Advantage we have from these Circumstances, do not compensate for the risk incurred by the Operation : There is however a plausible Objection to this Proposal ; it will be said, that whilst we are waiting for the period of Time, when it shall become absolutely necessary, the Disorder of the *Testis* may creep into the *Spermatic Cord*, which when once infected, renders the Operation excessively dangerous, and indeed quite desperate, if the Induration be within the abdominal *Rings*. The Accident, I confess, is possible ; but I believe
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will rarely happen under the Inspection of a discerning Practitioner ; for the *Cord* will hardly ever be affected by a Propagation of the Humour, till the Testicle is in a State of Increase, and this is not the Circumstance which I have supposed, but the very Stage of the Illness, which the Surgeon is to watch for and fix upon for the Operation.

IT is a prevalent Opinion, that the long Continuance of a *Scirrhus* is apt to taint the whole Mass of Blood, and to render the Operation fruitless. This Notion has likewise induced Surgeons to recommend an early Extirpation ; but I am very much mistaken, if the Principle they build upon is not false ; for whoever will make Enquiry into the Histories of Cancers cured without Relapses, will find a greater Proportion amongst such which were of many Years standing, than amongst those that were reduced to the Operation very soon after their Appearance ; and if this Observation be true, it proves, at least, that the Danger which may accrue from the mere Residence of a *Scirrhus* for a length of time, is not of itself a sufficient Motive for Castration. Indeed, for my own part, I am so far from judging unfavourably of a Cancer under this Circum-

Circumstance, that I think we cannot have better Evidence of its Locality, than the little Injury it has already done to the Constitution.

ANOTHER Objection to waiting till the Testicle shall have acquired more Bulk, is the greater Difficulty of performing the Operation, and the greater Danger resulting from the Operation: But when I describe the Method of extracting a Testicle, it will be seen, that this Objection has not so much Force as one would imagine. It is peculiar to the Amputation of this Part, that the Wound does not bear a Proportion to the Size of the extirpated Tumor: The Wound made for the Extraction of a Testicle weighing a Pound, is, or ought to be, nearly as large as that made for the Extraction of a Testicle of three Pounds: On this Account, we seldom see worse Symptoms after the Extirpation of a very large Testicle, than of one of a moderate Size: But what in this Place, deserves our Attention more, is, that few or none die of the Operation, if not attacked again by the cancerous Poison; which Remark, if true, shews that the Enlargement of the Testicle does not endanger Life, merely as it regards the Operation.

BEFORE I enter into an Examination of the several Processes for extirpating a Testicle, it may be proper to observe, that a *Scirrhus* of the Spermatic Vessels is not always, in the Opinion of some, an absolute Exception to the Amputation; for if the Affection of the *Cord* reach only to the Groin, on the outside of the *Abdomen*, though the Operation is still more dangerous than when the Vessels are free, yet, they say, it is not desperate; and there are some, who even think it safe; when the Hardness of the *Cord* extends to a small distance within the *Abdomen*; But in the last Case, though it is possible, by dilating the Rings of the Muscles, to pass a Ligature round the *Cord*, above the Extremity of the Induration, ⁹ there are others, who esteem it too hazardous an Undertaking, and for my own part I have very little Hopes of Success whenever the Spermatic Vessels are affected in any Degree; yet, dreadful as this Symptom is, it seems to have been overlooked by Surgeons till within these fifty Years, or I think so good a Practitioner as ¹ *Saviard* could not but have been apprised of it. There are Histories, which make mention of very large Tumors in the Course of the Spermatic Vessels, and I myself

⁹ Le Dran. 191. *Observ.* Vol. II. page 149. ¹ *Observ.* 125.

once saw a Patient who died of this Complaint, where we found a *Steatoma* reaching from the Testicle to the *Aorta*, as thick as a Man's Arm. There are likewise a few Examples, where that Portion of the *Spermatic Cord*, which lies between the Testicle and the *Abdomen*, is found, and all ² the superior Part within the *Abdomen* is affected. The Possibility of this Circumstance, requires the nicest Attention; but it happens, that those Indurations are generally painful, so that a Pain in the Back and Loins is a very good Criterion, by which to judge of the Impropriety of Castration; only that it must be distinguished, whether the Pain may not possibly proceed from the mere Weight of the Testicle distracting the Vessels; and this will be easily known, from the Relief which Rest and a Suspension of the Testicle usually procure when there is no *Scirrbus* of the *Cord*.

T H E R E is another Appearance of the *Spermatic Cord*, which also well deserves our Regard, though it is true, the Case occurs but rarely: This is an Enlargement of the Part without Induration, and has been found to be a *Hernia* of the *Intestines* or *Omentum*, extending itself but just into the ³ Groin. A

² Le Dran, 189. ³ Dionis, 189. Gareng. *Vol. II. p. 325.*
Surgeon

Surgeon not apprised of the Nature of such a Tumor, might possibly inclose an *Intestine* within the Ligature of the Spermatic Vessels, which could not but prove almost instantly fatal, and consequently renders the Observation very important.

THE manner of performing this Operation, as it is described by the best Writers, is, I think, exceptionable in several Particulars: They almost all of them agree, that the Skin should be pinched up transversely in the Groin by an Assistant, in order to make the Incision either with the Knife or Scissars, down to the *Spermatic Cord*. When the *Cord* is laid bare, they then separate the Skin from the *Cord*, by tearing it with the Fingers, or by introducing a Director to cut upon, or else, by a Pair of Probe-Scissars; all which Precautions seem to arise from an ill-grounded Fear of wounding the Spermatic Vessels themselves, or some large Artery, and one would think were the Prejudices that prevailed in the time of *Celsus*, who seems to strike at them by this peremptory Injunction, *Aperiendum autem* ⁴ *audacter est*, &c. that is, an Incision should be made boldly at once through the Skin and *Membrana Cellularis*, down to the *Tunica Vaginalis*; in doing

⁴ *Vol. II. p. 460.*

which,

which, there is not the least Danger nor loss of time, and indeed one might almost say, not the least Pain, when compared to the other Method of Cutting, either by the Director or the Scissars.

THE next Process in this Operation, after laying the *Cord* bare, is, as they describe it, extremely indelicate; I mean the tearing away the Testicle from the *Membrana Cellularis*, and snipping or cutting the Membrane wherever there is a Resistance: But the Unfitness of this Measure is most evident in a very large Testicle: I shall therefore describe what I apprehend to be the best Method of Extirpation in such a Case, that the Inconvenience of the contrary Method, may be the better conceived.

THE manner then of castrating in this Instance is, to make an Oval Incision, which shall begin a little above the *Rings* of the Abdominal Muscles, and extend almost to the bottom of the *Scrotum*; the Breadth of the Oval in its widest Part being at least one half of the lesser Circumference of the Testicle. When the Incision is made, and the Vessels of the *Scrotum* are tied (if any remarkable *Hæmorrhage* ensues) the Skin is to be dissected away from the *Cord*, to make room for

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the Ligature or Ligatures of the Spermatic Vessels ; after which the *Cord* is to be divided, and the Testicle, with the oval Piece of Skin on it, is to be dissected out of the *Scrotum*. This Process of the Operation is very much facilitated by first dividing the *Cord* ; for, by grasping the upper Part of the Testicle in your left Hand, it turns out much more readily than when it remains suspended, and you can only separate it on each side.

I HAVE observed, that the Oval Incision is not to be carried quite to the bottom of the Testicle ; for by this Contrivance, the Time and Pain of the Operation will be diminished : Because, as but little Skin is to be preserved, it will be a shorter, and an easier way, to cut out the Testicle with a Portion of Skin on it in the lower Part, than to dissect it out first, and afterwards take off the superfluous Skin ; therefore, when the Testicle is cleared away from the *Scrotum* the whole length of the oval Incision, the Operation may be finished by cutting away Testicle and Skin at the same time ; but what I have here said, must be understood of the Extirpation of a large Testicle.

By taking away so much of the *Scrotum* with the Testicle, as I have here recommended, you leave only a small Portion of it behind,
and

and consequently a small Wound ; but I have already hinted, that it is always in our Power to carry off such a Quantity of the *Scrotum*, that the Wound shall be small, however large the Tumor itself be.

THIS is a short View of the Operation I would recommend ; but the Method prescribed by the Moderns, is, to make only a longitudinal Incision to the Bottom of the *Scrotum*, and then to tear out the Testicle from the *Scrotum*. Now, the tearing of such a Quantity of Skin, as envelopes a Testicle of two or three Pounds Weight, is not only painful in performing, but by the Violence used, may probably be dangerous in its Consequence : Besides, in this Case, we are afterwards obliged to cut away as much of the loose *Scrotum*, as we shall judge necessary for the better healing of the Wound, which is likewise another painful Process ; so that I believe, upon a Comparison of these two Methods, there will be no Hesitation in determining which claims the Preference.

ANOTHER Circumstance considered in this Operation, is the Danger of a *Hæmorrhage* from the *Spermatic Artery* ; but this seems to arise from a Fear of employing the necessary Means to prevent it. Some of the greatest

Surgeons ⁵ believe to this Day, that by tying the *Spermatic Cord* we risk a Convulsion ; and to avoid this Error, the Use of Stypticks and Compress is recommended ; or if we are compelled to the Ligature, we are ordered to separate the Nerve from the Spermatic Vessels before we tie them. But this Prescription is no better founded in Anatomy than Experience ; for was it true, that the Ligature of the Nerve would bring on Convulsions, in this Case it is so small, and twists in such a manner round the Vessels, that the Separation of it is ⁶ impracticable. Some of the Moderns propose the Separation of the *Nerve* ⁷ and *Vas Deferens* together from the Spermatic Vessels, which *Celsus* and *Ægineta* do likewise ; and perhaps it may not be an unreasonable Conjecture, that the Rule laid down by them to separate the *Vas Deferens* from the *Spermatic Artery* and *Vein*, before tying them, may have led some of the Moderns into the mistaken Notion of separating the Nerve ; for the Ancients expressly call the *Vas Deferens* a *Nerve*.

THIS strange Apprehension of ill Consequences from tying the *Cord*, has so far misguided Men of the greatest Eminence, that it

⁵ Le Dran, 194.

⁶ Heister, 840.

⁷ Le Dran, 193.

has

has been even proposed as a Security against the *Hæmorrhage*, to separate the Testicle from the *Scrotum*, and after tying the *Cord*, to leave it there till it drops off by Putrefaction. One would have thought such a Proposition had come down to us from the earliest Ages, but it is really a modern Refinement, and seems to be approved of by one of the most ingenious Writers ⁸ now living. The same Apprehension has induced another great Man, to recommend the bruising of the ⁹ Spermatic Vessels, by rubbing them between the Finger and the Thumb, so that when the *Cord* is cut they should not yield any Blood: I will not take upon me to say the Process is very pernicious, but it possibly may be hurtful in some degree. The Hint of this Practice seems to have been borrowed from the Ancients; for ¹ *Albucasis* describes one Method of castrating Beasts among the *Arabians*, to be this kind of bruising the Vessels of the Testicle and *Spermatic Cord*, in consequence of which he says, they both wasted away. ² *Ægineta* says also it was in his Time one Method of making Eunuchs. Before I dismiss the Article of tying the *Spermatic Cord*, it may be worth

⁸ Heister, 840. ⁹ Le Dran, 193. ¹ Albuc. Chap. 69.
 Page 213. ² Ægineta, 303.

remarking, that in some few Cases, I have met with such an Elasticity of the Coat surrounding the Vessels, that the Knot of the Ligature has yielded to its Dilatation, and a fresh *Hæmorrhage* has ensued. In such an Instance, it is adviseable to carry the Needle with a double Ligature through the Middle of the *Cord*, and tie it both above and underneath the *Cord*, which will be a sufficient Security.

I DON'T know any other Article of Improvement upon this Subject worth observing; unless it may be mentioned, as a means of a speedier Cure, to pass a Needle and Ligature from the Skin at the lower Part of the Wound, through the Skin on the opposite Side, in such manner as to envelop in some Degree the found Testicle; or if one Stitch will not answer the Purpose, to repeat it once or twice more, in such Part of the Wound as shall be most convenient.



C H A P. IV.

*Of the Puncture of the Perinæum, and
the Diseases of the Urethra.*

SUPPRESSIONS of Urine may arise from a *Paralysis* of the *Musculus Detrusor Urinæ*; from an obstructed Stone in the Neck of the Bladder or *Urethra*; from an Inflammation of the Neck of the Bladder accompanied with an Enlargement and Compression of the *Prostate Gland*; and lastly, from *Strictures* or Obstructions in the *Urethra*; in consequence of a *Gonorrhœa*; and sometimes also, tho' rarely, without a previous *Gonorrhœa*.

IN the first Case, a skilful Hand may always introduce the Catheter; in the second, the Stone may either by the Catheter be pushed into the Bladder, if it be lodged in its Neck, or may be safely cut out, if it lies in the *Urethra*: In the two last Cases, it sometimes happens, that the Catheter cannot be introduced into the Bladder, and it was for this Emergency that our Predecessors invented the Operation of the Puncture in *Pe-*

rinæo, which they performed in different manners, as they were directed by the Nature of the Malady, or, perhaps, sometimes as they were led by Opinion to prefer this, or that Method.

IN all the Methods, they placed the Patient in the same Posture as in cutting for the Stone, that is, with his Thighs open and his Heels close to his Buttocks. Then they either pushed a common Trocar into that part of the *Perinæum*, which is wounded in cutting by the greater *Apparatus*, and so through the *Urethra* and Neck of the Bladder; or they carried it between the *Accelerator Urinæ* and *Erector Penis* Muscles, about an Inch from the Seam of the *Perinæum*, into that part of the Bladder, which lies between the *Prostate Gland* and the Insertion of the *Ureter*. When the Trocar was introduced into the Bladder, they withdrew the Perforator, and left the Canula in the Wound, till such time as they had reason to believe the Cause of the Suppression was removed.

THE first of these Methods has been the most in Use, though, to all Appearance, it is liable to many more Inconveniencies than the other. For supposing the *Urethra* to be clear
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of Obstructions, and that the sole Obstacle to the egress of the Urine be a *Stricture* at the Neck of the Bladder, it is still highly improbable, that the Instrument should be directed through the Canal of the *Urethra* and the Neck of the Bladder, without wounding them in more parts than one; and Experience has shewn, that it is not only difficult to avoid this Error, but even sometimes to push it into the Bladder itself; For the *Prostate* lying upon the *Rectum*, if you carry the Trocar a little too obliquely downwards, you either pass it between the Bladder and the *Rectum*, or else into the *Rectum* itself: On the other hand, if to avoid this risk, you carry it a little too obliquely upwards, you then miss the *Prostate Gland*, by pushing it between the *Symphysis* of the *Os Pubis* and the upper Part of the *Prostate*; perhaps too, at the same time, wounding the Bladder in that Part, which lies contiguous to the *Os Pubis*; in consequence of which, the Urine may possibly insinuate itself into the neighbouring Cells, when the Canula is withdrawn, and prove very troublesome, if not mortal.

BUT granting that the Operator be dexterous enough to carry the Point of the Trocar exactly opposite to the Neck of the Bladder;
yet

yet when the Neck is so constricted as not to admit the Introduction of a fine Probe, we can hardly suppose it possible for an Instrument of the Thickness of a Trocar to be insinuated, but by the Wound it makes through some Portion of the *Prostate*: Now the Disease, producing the Suppression, being an Inflammation of those Parts, with a strong Tendency to gangrene, the Violence done by the Operation itself, and, much more, the Irritation and Compression from the Canula left there, cannot but frequently augment that Disposition, and bring on a fatal Event: Accordingly we see in Practice, that the Arguments I have here employed against this kind of *Puncture*, are not Arguments *à priori*, but such as the Accidents of the Operation have furnished. I might also mention the danger of rendring the Wound of the *Urethra* fistulous; but as I believe this Method is now falling into discredit, I shall not examine into that Objection, nor some others less material, which might be started.

I SHALL not pretend to say positively, what Disadvantages will ensue from the *Puncture* of the Bladder between the *Prostate* and *Ureter*, because I would only speak from Experience; and this kind of *Puncture* has hitherto

therto been rather recommended than carried into Execution, few, that I know of, having yet practised it. However, should any Surgeon be inclined to perform it, I would advise him to introduce the Fore-finger of his Left-hand up the *Rectum* in order to feel the *Prostate*, as it will be an excellent Guide for the direction of the Trocar, which must be carried parallel to the *Rectum*, a little above and on one side of the Finger: It is the very Step which Monsieur *Foubert* takes in his new Method of cutting for the Stone, where he introduces his Trocar into the Bladder: But I shall presently describe his Manner of cutting, when the probable Objections to this kind of *Puncture* in *Perinæo* will naturally occur in examining the Merits of his new Operation.

BESIDES these Methods of drawing off the Urine when under a Suppression, they have also made way for the Reception of a Canula, by cutting open all the *Urethra*, from that Part of the *Perinæum*, where cutting is performed by the greater *Apparatus*, and continuing the Incision through the Neck of the Bladder. This they have done by the help of a grooved Staff when it was practicable; and where *Strictures* of the *Urethra* prevented
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the Introduction of a Staff, they have either cut, according to the best of their Judgment, without any Guide, or have pushed in a Trocar with a grooved Canula, and cut upon the Groove; when the Incision was made, they passed a Gorget, and by that means a Silver Canula, round which they twisted some fine Rag that it might lie easier in the Wound.

THE Objections to these Ways, besides the Difficulty of doing them, are so nearly the same with those I have already mentioned to the other Methods, that I shall not re-consider them. It may be proper, however, in this place to take notice, that after the Operation, it has been usual to inject Balsamic Remedies in order to deterge, as they say, the Feculencies of the Bladder; but whether this Process be ever necessary I much question; for I believe what is called a Foulness of the Bladder, is no more than that *Mucus*, which it usually furnishes when inflamed.

THE last Way of drawing off the Urine, is by a *Puncture* above the *Os Pubis* in that part of the Bladder where the high Operation is performed. This Method has been occasionally followed by some eminent Surgeons for many Years, and is still approved of; but

but it is not recommended, as having those superior Advantages which, in my Opinion, belong to it. It is an Operation of no difficulty to the Surgeon, and of little Pain to the Patient, the Violence done to the Bladder being at a distance from the Parts affected; it is equally applicable, whether the Disorder be in the *Urethra* or the *Prostate Gland*; and since the Method of curing *Strictures* of the *Urethra* by suppurative *Bougies* is become general, its Benefits are still more enhanced in Suppressions from that Cause; for whilst the Canula remains in the Bladder, the *Bougies* may be continually employed, which possibly in a small time will make room for the natural Passage of the Urine.

I THINK the Canula of the Trocar should be made with two Rings in its upper Part, like the Canula for the *Empyema*, by which means it may be tied round the Body with a small Ribband, and prevented from falling out of the Bladder. It is also a Matter of Importance, that the Canula should not be above two Inches and a half long, or perhaps two Inches only, though we read of ³ a Case where after the Urine was discharged, the Bladder subsiding into the *Pelvis*, with-

4 *Vide* Dacan, 379.

drew from the Canula, and made a second *Puncture* necessary, which the Surgeon performed with a long Trocar, and then the Operation succeeded. From this Instance, one would be induced to judge a long Trocar more proper than a short one; but as it is not mentioned how far it was introduced, nor at what distance from the *Os Pubis*, we cannot reap any positive Instructions from this History: However, it may be observed, that in cutting for the Stone by the high Method, the Urine always found a free issue, though the Bladder subsided into the *Pelvis*; and after making an Incision above the *Os Pubis* for a Suppression of Urine, where I have used a Canula not above an Inch long, the Bladder always emptied itself very readily; so that it is reasonable to suppose, if the *Puncture* be made in the proper Place, that is, about an Inch and a half from the *Os Pubis*, it will not be necessary to push the Instrument very far; but if it be made too high towards the Navel, the Bladder as it contracts, descending towards the *Os Pubis*, will draw the Canula obliquely downwards, and perhaps absolutely slip away from it, so that its Extremity shall be left in the *Abdomen*; or should the Bladder adhere strongly to the Canula, it will in
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that Case be suspended in a painful Situation. On the other hand, if the *Puncture* be made close to the *Os Pubis*, the Bladder in that part, often rising with an almost perpendicular Slope, leaves a Chasm between it and the Abdominal Muscles, or, to speak more strictly, a certain depth of *Membrana Cellularis* only, so that if the Trocar penetrate but a little way, it possibly may not enter into the Bladder; if it penetrates considerably, it may pass through the Bladder into the *Rectum*, or if not in the Operation itself, perhaps some Days after, when by the course of the Illness and Confinement, the Patient is more wasted; for the Abdominal Muscles then shrinking and falling in, occasion the Extremity of the Canula to press against the lower part of the Bladder, and in a small time to make a Passage into the *Rectum*.

I HAVE been led into this Criticism on the *Puncture* above the *Os Pubis*, by an Accident which happened in my own Practice, where though I introduced it above an Inch and a half above the *Os Pubis*, yet having pushed it full two Inches and a half below the Surface of the Skin, its Extremity in six or seven Days insinuated itself into the *Rectum*: The Patient
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from that time voiding no Urine by the Canula, and being troubled with a *Diarrhæa*, I concluded that a mortified Slough of the Bladder had separated, and that the *Urine* was evacuated into the *Pelvis*; but upon opening him after his Death, I found the Case to be as I have stated it, and that the Urine made the chief Part of his *Fæces*.

IT is an Article well worth our Attention, what length of Time we may safely leave the same Canula in the Bladder. In Paralytic Disorders of the Bladder, or where its Tone is broke by too long a retention of Urine, the *Puncture*, as I have already observed, is seldom or never necessary; but should either of the other Cases be complicated with this, it can hardly be expected, that the Bladder should recover its Functions in less time than three, four or five Weeks, which, to the best of my Judgment, seems to be usually requisite for the Recovery, when we draw off the Urine daily, or leave the Catheter in the Bladder five or six Days together. When the Suppression is from an accidental Inflammation of the Neck of the Bladder and *Prostate*, either accompanied, or not accompanied with Obstructions in the *Urethra*, its Duration is generally much shorter: But it may be remarked, that when there are
Strictures,

Strictures, though the Suppression is not total for so long a time, yet it remains in a great degree, which makes the continuance of the Canula in the Bladder expedient, that they may be more effectually treated.

Now it has been discovered, that a Catheter left in the Bladder longer than ten Days, may possibly gather such an Incrustation of Stone from the Urine, as not only to render the Extraction of it painful, but even impracticable : This ought therefore to be a Caution to us never to leave the Canula in the Bladder quite a Fortnight ; but I must confess that the shifting it may possibly prove an embarrassing Circumstance. I have known an Example, when after the Extraction of that in the Bladder, they could not introduce a second through the same Orifice, and the Patient, not caring to submit to another Puncture, died of the Suppression. To obviate therefore the Difficulty of this Case, I would advise the second Canula to be made with an Extremity like a Catheter, which being round and smooth will easily pass ; whereas the sharp Edges of the Canula of a Trocar will be an Impediment to its Passage. I have here recited the possible Accidents which may attend this Operation ; but they

ought not to be esteemed Objections to it, since when we are once apprised of them, they may be easily avoided; and in general it may be said of the Operation, that it is accompanied with very little Trouble and Pain, requiring only the Care to stop up the Orifice of the Canula with a Cork, which is to be taken out occasionally as the Bladder fills, till such time as the natural Passage opens, and the Patient can urine by the *Penis*.

THE Subject I am here treating of naturally leads me to the Consideration of *Strictures* in the *Urethra*, and as the Method of curing them by suppurative *Bougies* is not yet generally understood, I shall enquire into the Nature of their Effects upon this Disorder, and also into the Nature of the Disorder itself.

THIS Method of dissolving Obstructions in the *Urethra* has been lately taught and celebrated by Monsieur *Daran*; but as there are some who contend, that Monsieur *Daran* does nothing, that was not done before by many others now living, I shall not enter into this Dispute; and therefore when I mention the suppurative Method as an Improvement, I desire it may be understood, that I speak only of the Advantages it seems to have over those prescribed by the best Writers extant.

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MONSIEUR *Daran* reaps such prodigious Profits from reserving the Composition of his *Bougie* to himself, that we cannot expect he should reveal the Secret so long as he enjoys these lucrative Advantages : But he has given us a Collection of Cases with a preliminary Discourse, wherein he has fully stated the Effects of it ; and, if I am not mistaken, he has by this means furnished us with sufficient Indications for discovering, if not the same *Bougie*, at least a *Bougie* of the same Nature : Though what, perhaps, is of greater Consequence than the Composition itself ; he has there taught us how necessary it is to be patient and assiduous, in hopes of a future Benefit from a constant Application, though we do not perceive the immediate Advantages for many Days or Weeks.

THE Substance of the Doctrine he lays down may be comprised in few Words : He says, if the Canal of the *Urethra* be open enough to admit the Extremity of the *Bougie*, a Suppuration will ensue from the diseased part of the *Urethra*, which will in time relax and open the *Stricture* ; or if the *Stricture* opposes the Entrance of the *Bougie*, yet still the mere Point of the *Bougie* will suppurate it in a small degree, and by and by, though

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much

much more tediously than in the other Case, by relaxing, open it. Since therefore the Good wrought by *Daran's Bougie* is owing, as he says, to the mere Effects of Suppuration, it may reasonably be presumed that any other *Bougie*, operating exactly in the same manner, will answer exactly the same End; and that there are many of this Nature, is probable from the great Number of Cures performed lately both here and abroad, in Imitation of *Daran's* Method; tho' some Surgeons, finding their Experiments so successful, have imagined that they had discovered *Daran's* own Composition, not giving themselves leave to think there may be a variety of Compositions capable of working nearly the same Effects.

BUT the suppurative Power of certain *Bougies* has been so often mentioned by preceding Writers, that an unwary Reader is apt to conclude from this Circumstance, there is no essential difference in *Daran's* Method from that practised heretofore; but whoever will give a proper Attention to what is written on this Subject, will find that ⁴ those who speak of suppurating *Bougies*, often confound them with *Escharotic Bougies*, and do not

⁴ Vide Palfin. Chap. xxii. Edit. 2.

ascribe those wonderful Effects to a continued Suppuration, which *Daran* lays so much Stress on, nor indeed speak of it with any great Elogium; nay *Wiseman*, who seems to have given more Histories of Cures wrought by the *Bougie*, than any one, except Monsieur *Daran*, says, that if a Flux of Matter be brought on by the *Bougie*, we must desist from the Use of it, till the discharge be stopt by proper internal ^s Remedies: In short, there is not one modern Writer, who does not advise the *Urethra* to be laid open, in order to destroy any stubborn Obstructions, so little are they aware that by the constant application of a gentle Suppurative *Bougie*, they might at last be reduced and the Passage opened.

THE several Affections of the Urinary and Seminal Parts in which the *Bougies* may be usefully employed, are: 1. The mere Contraction of a Portion of the *Urethra*. 2. Ulcerations at the Extremities of the Excretory Ducts of the *Prostate Gland*, the *Vesiculæ Seminales*, and the *Glands* of the *Urethra*, yielding sometimes a plentiful, sometimes a small Gleet. 3. *Callous Cicatrices* or former Ulcers. 4. *Caruncles*, called also *Carnosities*

^s *Wiseman*, 415. *Vol.* 2.

and *Excrescences*, which have arisen from the Surfaces of former Ulcers. 5. A scirrhus or spongy Enlargement of the *Verumontanum*. 6. A *Scirrhus* of the *Prostate* or *Vesiculæ Seminales*. 7. A spongy Enlargement of the *Corpus Spongiosum* ⁶ *Urethræ*.

THERE are, however, several eminent Physicians and Surgeons, who do not believe that the Matter of a Gleet, or a remaining Running after a Clap, is the Suppuration of an Ulcer or Ulcers, but a preternatural Discharge of the Liquors of the neighbouring Secretary Organs, arising from a relaxation of their Vessels. They imagine also, that the Matter produced by the *Bougies*, is not the increased Suppuration of the Ulcers of the *Urethra*, but an increased Secretion of the Liquors of the *Urethra*; and lastly, they believe that what is vulgarly called a *Caruncle*, is no other than a *Stricture* in the *Urethra*, or a Protuberance of some Portion of its spongy Body.

IN what manner a Gleet is furnished, cannot well be determined, without ascertaining the exact Seat of a *Gonorrhœa*, upon which there has been formerly great variety of Sentiments; some esteeming the Discharge to be a purulent Matter from Ulcers, and others,

⁶ *Vide Astruc. page 234. Daran, page 5.*

an augmented Secretion from the Glands of the *Penis* in Men, and of the *Vagina* and *Urethra* in Women. One would suppose that the Dissection of Persons, dying with a *Gonorrhœa* upon them, should immediately have decided this Question. But if upon Enquiry, Ulcers have sometimes been discovered in the *Urethra*, there have also been many opened, where there were no evident Signs of Ulceration; and it is principally from these different Appearances, that Surgeons have formed such different Judgments.

BUT that the *Lacunæ* of the *Urethra* are usually ulcerated in a *Gonorrhœa*, seems now to be generally assented to, and most Surgeons think that in those Instances I have alluded to, which had no mark of Ulceration, they were either negligently observed, or perhaps examined after the Ulcers were healed: So that notwithstanding many still believe, that a Gleet is not the Discharge of an Ulcer, all allow the Existence of Ulcers during the *Gonorrhœa*.

I MUST confess however, that I am very much inclined to believe, the Running is not all of it a purulent Matter, but partly Matter, and partly a Discharge from the neighbouring Secretory Organs, as also from the *Vesiculæ Seminales*, when they or their Ducts are affected.

It should seem probable, that the first Running is of that Nature, not only because it is often produced in less time after the Infection is communicated, than we see requisite for the formation of Matter in every other Instance, but because the Appearance of Matter is frequently the first Alarm of a *Gonorrhœa*; the Pain in Urining, and the other Symptoms of an Inflammation and Ulceration, following sometimes two or three Days after.

For these Reasons I suppose, that the Venereal Poison in its first Operation irritates only, and by that Irritation brings on an Increase of Secretion, which happens to the Glands of the *Intestines* from Purgatives, to the salivary Glands from smoking, and indeed to every other secretory Organ of the Body from irritation. As the Poison operates more strongly, the Inflammation increases, and the Ulcers form and extend, when not only the Matter from the Ulcer is sanious, but all the secretory Vessels communicating with the ulcerated *Lacunæ* separate a thinner Fluid than usual, and both the Matter and secreted Fluids continue to be thin so long as the Inflammation is violent.

I KNOW it is asserted that the Discharge of a *Gonorrhœa* has all the Properties of a purulent Matter,

Matter ; but I believe this is begging the Question ; for we see some Men liable to a Running neither Venereal nor preceded by any Venereal Taint, where its resemblance to Matter is altogether as strong as that of a *Gonorrhæa* ; and yet in this Case, no Ulceration is suspected, nor are there any Symptoms of it. In Women too, it is sometimes very difficult to distinguish the *Fluor Albus* from Matter ; and in some kinds of Inflammations of the *Prepuce*, there are very large Secretions of a thin Matter, without any Ulceration of the Skin. These Arguments should induce one therefore to believe, that the Discharge of a *Gonorrhæa* is not all of it a purulent Matter ; and it may be further observed in support of this Suggestion, that the Quantity of it is generally much greater, if we may judge by Analogy, than a few Ulcers of the *Urethra* could possibly furnish : But to conclude in one word, I think we have almost ocular Proof of it in the Examination of Women ; for in them, notwithstanding the *Gonorrhæa* be exceedingly plentiful, yet upon the nicest Inspection, we often cannot find the least degree of Ulceration in the *Vagina* ; though if the Discharge was purely the Digestion of Ulcers in that Part, it is likely some few of them would
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be visible : I should therefore on these Accounts think it even possible, that in some slight *Gonorrhæas* which disappear in a few Days, the Venereal Poison may not have been active enough to bring on an Ulceration of the *Urethra*, but only a mere Irritation of the *Lacunæ*. What I have here said on the Nature of a *Gonorrhæa*, will, I hope, conduce to the better understanding the Nature of those Diseases, which are derived from a *Gonorrhæa*.

WHEN the Inflammation ceases, and the Ulcers of the *Urethra* heal at the same time, the Cure of the *Gonorrhæa* is perfected ; on the other hand, if the Inflammation be only removed and the Ulcers remain open, a Gleet must ensue. It is upon this principle of Ulcers subsisting in the *Urethra*, that M. *Daran* accounts for the Action of his *Bougie*, supposing it to have the Property of healing them with a sound Cicatrix : and if its Operation can be understood, when there are Ulcers, it will not be difficult to comprehend it, when there are none ; since it seems to have the Power of opening every unsound Cicatrix of the *Urethra*, and bringing them immediately into an ulcerated State ; so that whether there be an Ulcer or a Cicatrix only,
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when the *Bougie* is first applied, the Case presently becomes the same in both Instances.

I HAVE here spoke with some Positiveness of the Faculty the *Bougie* has to carry off the Scab, or unsound Cicatrix from the Ulcers of the *Urethra*; but perhaps it may be a questionable Point with some People, and therefore I shall observe in favour of this Opinion, that the first Discharge procured by the *Bougie* is generally very sanious, and evidently flows from the Place, where the Obstruction is; that part of the *Bougie* only being covered with Matter, which answers to the Obstruction: Again, the *Chordee* excited by the Use of the *Bougie*, and which is almost always the Consequence of applying it, is infinitely more painful where the Obstruction is, than in the other Parts of the *Penis*; from which Consideration, I think it highly probable, that both the Discharge and the Pain are chiefly occasioned by inflaming and suppurating the Obstruction; tho', I must confess, that a *Bougie* will produce a *Chordee* in a sound *Penis*, where there is no Obstruction: But the *Chordee* in that Instance extends through every part of the *Penis*, and is by no means so painful as in the other.

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THERE are many, as I have already intimated, who imagine that the prodigious Increase of certain Gleets at particular Times, lasting only for two or three Days, and then suddenly abating to their wonted Quantity, is incompatible with the Doctrine of a purulent Discharge; they suppose that the Ulcers cannot possibly enlarge and diminish again in so short a time, as to account for this difference of Evacuation, and therefore conclude a Gleet to be nothing more than a preternatural Excretion from the relaxed Vessels of the *Urethra*, which they believe may often be more relaxed by a variety of Accidents. But from what I have said on the complicated Circumstances of a *Gonorrhœa*, it is probable, that however the Matter of a thick Gleet may be furnished by Secretion, still the Stimulus provoking that Secretion is kept up by the Subsistence of Ulcers; and it is also as probable, that when the Gleet is very thin and in small quantity, it is the mere discharge of those Ulcers.

THAT sometimes unknown Causes, and sometimes Debauches, or any violent Emotion of those Parts, should occasionally bring on an Inflammation of the Ulcers and the neighbouring Vessels, and in consequence of that, a temporary

porary increase of the Gleet is not wonderful, when we reflect that habitual Ulcers of every other Part of the Body are often in a fluctuating State, and generally suffer from Excesses of every kind.

IF the Notions I have advanced of the Nature of a *Gonorrhœa* and *Gleet* be true; that is, if the Discharge be partly purulent, and partly an Excretion, it will be presumed that the Running brought on by the use of a *Bougie* is also of a mixed kind. M. *Daran*, in order to prove the Suppuration on the *Bougies* to be the Matter of an Ulcer, refers us to a very curious Experiment. He says, that if we leave one of his *Bougies* four Hours in the *Urethra* of a Man that has never been infected, it will come out unsoiled; and if we instantly put that same *Bougie* into the *Urethra* of another who has had a *Gonorrhœa*, it will in less than four Hours produce a Suppuration, and the *Bougie* will have a thick Matter on it: Hence he concludes, that no part of the Discharge is an Excretion, arising from the Irritation of the *Bougie*; because, he says, that Circumstance would happen equally in both *Urethras*: Besides, that the *Bougie* at first is covered, as I before mentioned, with Matter only in that part of it, which
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lay in contact with the Obstructions of the *Urethra* ; whereas was the Matter afforded by the Excretory Ducts, and not by the old Ulcers, it would be covered almost equally in every Part.

I CONFESS that this Experiment will have great Weight in deciding the Question before us ; but, I suspect, he has not often repeated it on People who have never been clapped, at least he does not say he has ; and I am the more inclined to think so, because in the same Page ⁷ he seems to insinuate, that the Experiment is needless, declaring it a sufficient Proof of the Fact, that in a diseased *Urethra*, the *Bougie* is covered with Matter in that Place only which touched the Ulcers.

BUT this Suspicion is not founded on mere Conjecture ; for I have prevailed upon several Lads from Twelve to Twenty Years of Age, who never had been clapp'd, to submit to the Introduction of a *Bougie* ; and in every one of them, the *Bougie* collected a certain Quantity of Discharge, but from some, more plentifully than from others : I suppose it can hardly be presumed that a Mercurial *Bougie*, which I employed, could have eroded the *Urethra*, and brought on a Suppuration in Six, Five,

Four, or three Hours, which were the several Lengths of Time I allotted to the different Experiments ; but if the Discharge was not a Matter from Sores, it must have been an Excretion from the *Lacunæ* of the *Urethra*. However, lest it should be suggested, that the Operation of my *Bougie* ought not to be compared to that, which would be produced by a *Bougie* of M. *Daran*'s Composition, I also tried one of his, which by Accident fell into my Hands, in a manner which leaves no doubt with me of its Genuineness, and I found the Effects exactly the same. It therefore probably follows from these Experiments, contrary to the Opinion of M. *Daran*, that all the Discharge procured by the *Bougies* is not *Pus* ; but partly *Pus*, and partly a Secretion from the neighbouring Vessels, in consequence of the Stimulus of the *Bougie*. Nevertheless I have, with M. *Daran*, made use of the Word *Suppuration* to express the Discharge produced by a *Bougie*.

I SHALL also in this Place take notice of another very extraordinary *Phænomenon*, which M. *Daran* affirms to have occurred in his Practice. He says, that by opening the Ulcers or Scars of the *Urethra*, and bringing on a Discharge with his *Bougie*, an infectious Quality

lity is excited, notwithstanding the Patient for many Years before, may, to all Appearance, have been perfectly sound. This he imputes to the Operation of the *Bougie*; supposing that it puts the Venereal Poison into Action, which, though it may lie dormant, he says, is not extinguished so long as these Disorders of the *Urethra* subsist; and, on this Account, he expressly forbids all Commerce with Women during the Use of the *Bougie*.

THE Assertion here proposed is of a very interesting Nature, and it concerns us much to be assured of the Fact; but, I must own, I have some doubts, whether M. *Daran* may not have been imposed upon in this Article: For I myself know, that Husbands labouring under a Gleet, have, upon violent Eruptions of it, continued to approach their Wives without infecting them; which I think would not so frequently happen as it does, if the Discharge created by the *Bougie*, was infectious, because the two Cases seem to be parallel to each other.

BESIDES, it appears to me, that, was it true, it would be clear beyond a doubt; for there are so many Men, who cannot be persuaded to refrain from their Wives during this
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Treatment, that we should have numberless Proofs of it continually. I have had some Examples of this Nature under my own Care, where the Suppuration was in an excessive Quantity, but no Infection was communicated: However, as M. *Daran*, who has had so good Opportunities to inform himself, is positive in this Opinion, it must be remembered, that my Arguments are only Negative, and my Instances, perhaps, too few to convince us that it never happens.

STRICTURES of the *Urethra* are possibly the most frequent Causes of Obstructions, and happen sometimes to a small Portion of the Passage only, at other times, to a very considerable Length of it, and frequently, to three or four different Parts of it. The Symptoms excited by *Strictures* are very nearly the same with those occasioned by the other Obstacles of the *Urethra*, that is to say, a Difficulty to urine with or without burning, a continual urging to urine, a total Suppression of Urine, (*Dysury*, *Strangury*, *Ischury*) and lastly, an Incontinence of Urine; all which different Accidents happen to different Men, under the same Circumstance, and frequently to the same Patient at different Times.

THIS Disease is neither absolutely peculiar to Venereal Affections of the *Urethra*, nor to the *Urethra* itself: Nevertheless, it seldom arises from any other Cause, nor indeed is any other Part of the Body so frequently affected as the *Urethra*; but we meet with Instances of it now and then, not only in Adults who have never been clapp'd, but even in Children who have been suspected to labour under the Stone: And that it may be produced without a previous Venereal Taint, we have another sufficient Evidence in the Writings of the Ancients, who speak of it, when the Pox had not yet made its Appearance in the known World⁸.

THE Disposition there is sometimes in membranous Parts of the Body to contract, is very notorious: I have in my own Practice met with four Instances, where the *Rectum* near the *Anus* was contracted, and one of them, so much as not to exceed the Diameter of a Writing-Pen; in consequence of which, the Patient was frequently at the Point of Death from a Suppression of the *Fæces*, notwithstanding every Art was used to prevent this Accident. But this Propensity to contract, seems to be much stronger in those Parts which have been wounded or ulcerated, than

8 *Vide Hippoc. Aphor. 81. Sect. 4.*

in those which have been always unhurt; for the contractile Disposition of Scars sometimes continues to exert itself for many Weeks and Months after the Sore is healed, as we may observe particularly in Burns, or indeed in any Wounds of the tendinous and ligamentous Parts, as the Fingers and Toes. And without doubt, it is in consequence of previous Scars in the *Urethra*, that *Strictures* happen so frequently to People who have been clapp'd, in comparison of those who have not: But what is very singular, this Contraction sometimes does not come on in less than fifteen, twenty, or thirty Years after the *Gonorrhœa*. It is very remarkable in regard to many of these *Strictures*, that the Symptoms arising from them shall be extenuated by acting against the *Stricture*; that is to say, by introducing a *Bougie* big enough to distend the *Urethra*, the Painfulness of the *Stricture* shall cease, and the *Strangury* shall abate, so that a Man who is accustomed to make Water every Hour, shall, by wearing a *Bougie*, retain it three or four Hours: It is an Event one would not expect, but I have met with a similar Case in another Species of Contraction; a Contraction of the Fingers attendant upon a *Ganglion* in the Palm of the Hand, which ran under the *Ligamen-*

tum Carpalæ above the Wrist : These *Ganglions* generally bend the Fingers so much, as to bring the Extremities of them almost close to the Palm of the Hand. In the Case I allude to, the Contraction was exceedingly painful ; but in Proportion, as I extended the Fingers, and preserved them so by proper Bandage, the Pain was mitigated, till at last it wholly ceased when they were quite straight. If I neglected to keep them extended, they again contracted and became painful ; which proves what I have here advanced, that acting against the contractile Disposition, instead of causing Pain, as one would suppose, may on the contrary prove a means of Relief.

I HAVE here presumed, that the mere Stretching of the *Urethra* procures this Abatement of Symptoms ; and I believe the Cause will hardly be doubted, seeing that the Effect is so sudden, often taking place the very first time of applying the *Bougie*, before it can be suspected that the Suppuration could have wrought such an Effect : Besides, that upon withdrawing the *Bougie*, the *Strangury* returns immediately, which is an Argument, that it operates only by supporting the contracted Fibres.

IF the Symptoms of *Strictures*, *callous Scars*, *Caruncles*, and *Tumors* of the *Corpus spongiosum*

sum Urethræ are essentially different from each other, those Differences are not yet particularly specified by any Writer : But amongst other Characteristics, by which to distinguish the Disease of the *Prostate Gland*, and *Vesiculæ Seminales*, from Obstructions of the *Urethra*, I think it has been justly observed, that where the *Urethra* only is affected, the Patient in making Water voids Matter before he does his Urine : On the other hand, where the *Prostate* or *Vesiculæ Seminales* only are concerned, Matter follows the last Drops of Urine : But it frequently happens that the one is complicated with the other ⁹.

I AM inclined to believe that the generality of Cases cured by a gradual Distension, were chiefly *Strictures* ; for it is certain, that by a constant Use of keeping open the *Urethra*, several Cures have been wrought ; though there were also sometimes other terrible Disorders relieved by this Method ; for it happens now and then, that the worst Consequences ensue from the slightest Obstructions, and it is not uncommon to meet with *Stranguries*, Suppressions of Urine, and even *Fistulas in Perinæo* arising from Obstacles in the urinary Passage, which yield very soon to the Introduction

⁹ *Daran's Prelim. Discourse*, 185.

of a common *Bougie*, or a Leaden-probe; and in many of these Instances, the Complaints cease when once the Passage is opened: But as the Property of Suppuration was not sufficiently attended to, Surgeons formerly neither sought those *Bougies* which were most suppurative, nor procured all the Discharge they might by Diligence have procured with those they did use; in consequence of which, the Patient was often subject to Relapses, unless he daily, or once in two or three Days, introduced a *Bougie* or Leaden-probe to keep open the Passage; for there are some *Urethras* so prone to contract again if the Disease is a *Stricture*, or so apt to swell again, if the Disorder is an Enlargement of the *Corpus spongiosum Urethræ*, that Patients are constantly obliged to pass a *Bougie* or Leaden-probe the Moment before they urine.

THE old Surgeons employed upon these Occasions a small Wax-Candle (*Bougie*); but the Wax often melting in the *Urethra*, and the Wick sometimes breaking in the Extraction, and a Part of it remaining in the Passage, the Danger of this Accident has for many Years brought it into disuse, and the *Bougie* is now made of Cloth dipt in Wax or Plaister, and then rolled up into the proper Form: These

Bougies

Bougies are of all Sizes, from the Bigness of a Knitting-needle to the Size of a large Catheter. Those who attempt a gradual Distension by Leaden-probes, have them also made with the same Gradations. There are some who prefer Probes made of Whalebone, which are not liable to break as Leaden-probes, especially as it is a Fashion to daub Leaden-probes with *crude Quicksilver*, which renders them brittle, and has several times occasioned this Misfortune : Besides these Artifices for dilating the *Urethra*, it has likewise been customary to use Catgut of a Size suitable to the Degree of *Stricture*, which having the Quality of expanding gradually as it moistens, has induced some to give it a Preference to the other Contrivances. There have also been Surgeons, who by means of a Catheter open at its Extremity, have endeavoured to introduce a small Tent into the *Stricture*, with design to act only on the diseased Part ; they tied a Piece of Thread to it, that they might withdraw it at Pleasure, and in this Manner repeated the Operation as often as they judged necessary ; but the Pain of introducing the Tent ; the Difficulty of extracting it, if of a Nature to swell ; the Danger of breaking the Thread ; and, in short, the little Benefit pro-

posed by this Method in preference to the others, always obstructed its general Acceptation, and at last absolutely exploded it.

It may be perceived, by the Description I have given of this Operation, that it all along supposes a Possibility of passing the *Bougie* to a certain Distance in the *Urethra*; and though the Introduction may be slow, yet that it does, from Day to Day, make some progress towards the Neck of the Bladder: But Experience shews, that there are a Multitude of Cases, where the Obstacle presents itself within an Inch or two of the Extremity of the *Penis*, and with such a Resistance, as is not to be surmounted by Force, or, at least, by that Force which Surgeons have usually dared to exert, in breaking through *Strictures* of the *Urethra*; and, in many of these Instances, every Attempt to relieve by Distension has been baffled.

HOWEVER, in all times there have been enterprising Men, who have endeavoured, by *Escharotic* Applications at the Extremity of their *Bougies*, to make way through those Obstacles, which resist the *Bougie* or the *Leaden-probe*; and, to say the Truth, this Practice has been avowed by the ablest Surgeons of the two last Centuries; but at present it is universally condemned,

condemned, and indeed has been so almost ever since *Saviard's* time ¹.

THE Objections to the use of Caustics were the Difficulty and almost the Impossibility of directing them, so as to eat through all the diseased Parts of the *Urethra*, without destroying the sound Part; the Impracticability of preventing the *Urethra* from contracting, when it healed, as much, if not more than it was, at the time of applying the *Escharotic*: And lastly, the Pain was so excruciating, and perhaps the Application sometimes so poisonous, that an immediate Mortification of the *Scrotum*, *Penis*, and *Bladder*, were sometimes known to ensue; upon these Accounts the use of *Escharotics* seems to have been entirely rejected, and another kind of Process has been established in their Place, which in point of Severity is nearly if not quite as exceptionable.

THIS is, by cutting in *Périnaeo*, if possible, upon a Staff, and then by the help of a *Gorget*, to introduce a Silver *Canula* covered with a fine Rag into the Bladder, which is to be kept there for two or three Days, and then withdrawn; after which, the Obstructions are to be destroyed by proper *digestive* and *escharotic* Medicines; at the same time, a Seton is to be passed from

¹ *Observ.* 74.

the Wound through the *Urethra*, and out at the Extremity of the *Penis*: This Seton is daily to be covered with either *escharotic* Powders, or strong Digestives, in order to waste the Obstructions of that Part; when this is done, a Catheter is to be introduced into the Bladder and kept there, that the Urine running off that way, the Wound may more easily heal. When the Wound is healed, the Catheter must be taken out². If the Staff cannot be introduced to cut upon, a *Trocar* with a grooved *Canula* is recommended, which being pushed into the Bladder will serve to direct the Incision of the *Urethra*, from the *Perinæum* even through the *Prostate* and Neck of the Bladder, in case these Parts are affected likewise; after which, the other Processes will be the same, as if the Incision had been made on a Staff³.

ACCORDING to the Representation I have here given of these Methods, a striking Absurdity offers itself immediately, in the proposition of carrying a Seton from the Wound out at the *Penis*: For if we admit that a Seton can be passed, a *Bougie* covered with

² *Vide* Dionis, page 212. ³ Dionis, page 212. Le Dran's *Oper.* page 370. *Observ. de M. Le Dran, l'Obs.* 77. *Memoires de l'Academie de Chirurgie*, page 438. Vol. I. Astruc. page 243. Palfin, 188. Vol. I.

the same Remedies may be applied, and with the same Advantage: If it cannot be passed, no Service can be done by the Operation to that part of the *Urethra*, which consequently renders the whole Operation of no Effect. However I must not omit, that ⁴ some have proposed a Remedy in this Case, by cutting up the whole *Urethra*; and, as an Improvement upon this Method, some have recommended the healing it afterwards upon a Catheter, when the Obstructions are destroyed.

I HAVE already mentioned some other Exceptions to this Method of getting into the Bladder, in treating of the Puncture in *Perinæo*; but as I believe there are no Advocates at present for this Practice, I shall use no more Arguments to prove its unfitness.

ULCERS of the *Urethra* cannot be supposed to subsist, without furnishing a greater or a less Quantity of *Gleet*, and where the Patient has no discharge after a Clap, the Surface of the *Urethra* is either healed, or covered with some kind of Scab or Excrecence. A remaining *Gleet*, and indeed all the other Disorders of the *Urethra* are usually imputed to an unskilful Treatment of the *Gonorrhœa*, and

⁴ Vide Wiseman, 428. Vol. II.

particularly to the use of astringent Injections : But this Censure ought to be passed with great Tendernefs, seeing there are so many Examples, where the Case happens, after the most regular and ingenious Methods of Cure.

It cannot be denied, astringent Injections sometimes produce Mischief upon the Spot, and perhaps sometimes intail a Mischief, that shall not be perceived for many Years : Though, by the way, it may be observed, that they are seldom employed, except in stubborn *Gleets*, which possibly might have had the same Consequence without them ; but where Injections have been used, the Disorder is always ascribed to their Operation.

THERE is not perhaps in Surgery a more delicate Point than the proper Management of a stubborn *Gonorrhœa*, which continues to run in spite of all internal Methods of Cure. Surgeons recommend Patience, speak slightly of the Complaint, and give hopes that Nature will, by and by, work a Cure of herself : But few People are to be pacified by this Conduct, when they are thus circumstanced, and they wish to be cured at any hazard. Under this Difficulty we have no Alternative : Astringent Injections must be employed, or the Case abandoned. Indeed we may have
recourse

recourse to the *Bougie*; but, as the *Bougie* requires a great length of Time to perfect the Cure, I believe few Patients would submit to it, unless Injections had first been found ineffectual; and in this Situation, I myself have used the *Bougie*. I shall make no Scruple to confess, that I have sometimes employed astringent Injections, but I do not recollect ever to have met with any Misfortune from them: It is true, I have always begun with weak Injections, and gradually increased their Strength, which no doubt may have greatly contributed to their Innocence. However, I would not be thought to contend for the use of them, except on this Occasion, when, in my Judgment, they seem to be necessary; for I question whether an habitual *Gleet*, that is suffered to run on, is not more likely to terminate in some painful Disease of the *Urethra*, than if it had been stopped by an astringent Injection within the first three Months of its Appearance.

ULCERS of the *Urethra* and *Verumontanum* are sometimes complicated with a contraction of the Canal, and sometimes the Canal is open: M. *Daran* affirms, that he can distinguish by feeling with his *Bougie* their exact Situation, Form, and Nature, so as to determine

determine whether they be contiguous to, or at a small distance from the *Verumontanum*; whether they be round or oval, and whether their Edges be smooth, fungous or callous: I own, this is a delicacy of Touch, so much above my Conception, that I cannot help thinking he is mistaken.

THE Operation of a *Bougie* upon these Ulcers, seems to be nearly the same with that of external Applications on Ulcers in other parts of the Body, where, if they be not continued till the Sore is entirely healed, either a Fungus or a Scab will sometimes form; but the most parallel Case to Ulcers of the *Urethra* are the little ragged Ulcers, that sometimes proceed from small Abscesses in the Verge of the *Anus*, which are not readily to be cured, but by little Doffils laid in close between their Edges, so as to fall into contact with every point of the Ulcer. I have chose this Instance for Illustration, because as the Surface of the *Urethra* is every where concave, I do not think it improbable that it may sometimes collapse, and by that means occasion one part of the Ulcer to rub against the other, resembling in some degree the state of those Fissures of the *Anus*.

PERHAPS

PERHAPS it will be suggested, that if this be the principal Action of the *Bougie*, any kind of *Bougie*, distending the *Urethra*, and preventing the corrugation of the Ulcer, will put it into a Disposition of healing: But Experience shews, that every Species of Application is not suitable, some acting with much more Innocence and Benefit than others. *Escharotic Bougies* are, as I have said, never to be trusted. The *Leaden* and *Whalebone* Probes, though they distend the *Urethra*, are painful to the Sores, and bring on Defluctions or *Hemorrhages*. The *Wax-candle* is bad in two Extremes; first, whilst it is hard, it has the Property of the two former, and afterwards, by the heat of the Part, the Wax sometimes melts and runs off from the Rag, so that the Candle is no longer firm enough to support itself against the Sides of the *Urethra*: *Bougies* of Plaisters are therefore the most proper Composition, which, if made of a due Consistence, will soften sufficiently to prevent any painful Friction, and yet will preserve their original Shape.

NEVERTHELESS, I would not be understood, by what I have here said, that it is only the Consistence of the Plaister, and not its *medical* Virtues that are to be considered: I have

have no doubt, that in most Cases those Virtues are necessary, though I am still of Opinion, that several of the Plaister *Bougies* formerly used would, with Affiduity, have cured some Ulcers; but Surgeons hitherto have had so little Notion of stopping mere *Gleets* by *Bougies*, that I do not so much as meet with an Insinuation of this Practice; and *Wiseman* is so far from imagining it, that in Obstructions of the *Urethra* complicated with a *Gleet*, he orders the *Gleet* to be stopt first by internal Means, before the *Bougie* be applied ⁷.

I HAVE taken notice that M. *Daran* supposes the whole Discharge procured by the *Bougie*, to be the *Sanies* or Digestion of Ulcers; but I believe I have said enough to prove, beyond Contradiction, that it is also a Secretion from the Glands of the *Urethra*, &c. &c. And I shall observe here, how reasonable it is to conclude, that this Evacuation from the neighbourhood of the Ulcers, may tend to have a good Effect upon the Ulcers themselves, since we see that in general, the nearer we procure a Drain from the Part affected, the more efficacious will that Drain be.

CALLOUS *Cicatrices* are another Article amongst the Diseases I have enumerated of the

⁷ *Wiseman*, page 415.

Urethra ; but the great Similitude there is between this Affection and a *Stricture*, make any Enlargement on it altogether needless.

CARUNCLES, called also *Carnosities* and *Excrescencies*, which were for near two hundred Years supposed to be the only cause of Obstructions, have from the beginning of this Century, or a little before, been almost wholly exploded, as being purely Chimerical ; so much have Writers run into Extremes on this Subject. M. *Petit* opened the *Urethras* of twelve People labouring (as it is ⁶ affirmed) under Obstructions in that Part, and found not the least Appearance of a *Caruncle* in any of them : These Observations, made by so judicious a Surgeon as M. *Petit*, seem to have greatly confirmed the Opinion, adopted by the most eminent Practitioners before his Time, that there is no such Disease as a *Caruncle* ⁷. But now again it is believed, that they are one of the Causes of Obstructions in the *Urethra* ; and M. *Daran* goes so far as to assert, they are, if not the only, the most frequent Cause ; indeed he ranks *callous Cicatrices* of the *Urethra* under this Head, and thus blends these two Diseases together, which are generally considered in opposition the one to the other ⁸.

⁶ Palfin, 189. Vol. I. Garengent. page 22. Vol. II.

⁷ Saviard, Obs. 73.

⁸ Daran's Prelim. Dis. 132.

I BELIEVE it will seldom happen, that *Caruncles* are not accompanied with either a *Stricture*, callous *Cicatrices*, or *Protuberances* of the *Corpus spongiosum Urethræ*, in which Case the *Caruncles* make only a part of the Obstruction, and possibly may often not be bigger than the Head of a Pin; but those who have examined the *Urethra* after Death, expecting to find them of a considerable Bulk, and not meeting with such, have, in all likelihood, frequently overlooked these small Appearances (probably diminished also by Death) and concluded there were no such things. That such small *Excrescences* may occasion violent Disorders in so tender an Organ as the *Urethra*, I have had occasion to see a notable Instance of in the *Urethra* of a Virgin, where they grew in a small Quantity upon the Orifice of the *Meatus Urinarius*, and for many Months had produced the most excruciating Torment, which continued till I had totally extirpated them.

YET notwithstanding what has been so positively said, that *Caruncles* have no Existence but in the Fancy, I have opened some *Urethras* where they were very evident: In one, I found near the *Verumontanum*, a Filament running across the *Urethra*, which had ob-

structed

structed the Entrance of the *Catheter*, and the Patient died of a Suppression of Urine. In another, I found small Filaments, some loose, and one of three Quarters of an Inch long attached at both ends to the *Urethra*, but running in the Direction of the Canal. In a third, besides the Contraction, I found a small Excrescence, not unlike one of the *Tricuspid Values* of the Heart; which, with the Instances I could produce from others, proves that the Doctrine of *Caruncles* is not without Foundation.

THE Action of the *Bougie* on a *Caruncle* seems to be partly Compression, and partly Suppuration; for I question, whether by the latter alone, the Cure could be so speedily effected; as is the Case with every kind of *Fungus*, which is much more readily reduced by proper Applications, with the Assistance of Pressure, than by Applications alone.

A *Scirrhus*, or sometimes perhaps a spongy Enlargement of the *Verumontanum*, with or without Ulceration, seems to be a very common Cause of Obstruction, and where in Coition the Emission is painful, or the Semen is either injected into the Bladder, or only flung a little way forward in the *Urethra*, if the *Urethra* itself is not obstructed, the *Verumontanum*, and

the Extremities of the Excretory Ducts of the *Vesiculæ Seminales* are generally affected. If Semen be emptied into the Bladder, it follows the Urine when the Patient first makes Water; if it be discharged into the *Urethra*, it runs off gradually soon after the Erection ceases. I have been surpris'd at the great Number of Instances I have seen of the second Kind; but it must be observed, that these Symptoms are seldom constant, for sometimes the Patient emits freely, at other times is subject to this Irregularity. When it is emptied into the Bladder, it is said to be owing to a deformed Cicatrix of the *Verumontanum*, which inverting the Orifices of the Excretory Ducts of the *Vesiculæ Seminales*, turns them towards the Bladder⁹: But this accounts for it only where the Symptom is constant, and therefore I am inclined to think, that in general it may rather arise from a greater or less Enlargement of this Part at different Times, which will necessarily obstruct the Canal more or less; though it must be remarked, that an almost total Obstruction in any part of the *Urethra* will also prevent a free Emission, notwithstanding the *Verumontanum* was unaffected, and in all probability this is the

⁹ *Memoires de l'Acad. de Chirurg. p. 427. Vol. I.*

most common Cause of Obstructions of the Semen.

A *Scirrhus* of the *Prostate* Gland and of the *Vesiculæ Seminales*, is another Disorder, said to arise from previous *Gonorrhæas*; but though the Excretory Ducts of these Organs being indurated or ulcerated, must consequently occasion some Disorder in the Organs themselves, yet a *Scirrhus* and Enlargement of the *Prostate* Gland often occurs, when no venereal Taint has preceded; whereas Disorders of the *Urethra*, are, as I have before mentioned, the usual Consequence of Claps. A *Scirrhus* of the *Vesiculæ Seminales* is, I believe, an uncommon Case; but, to confess the Truth, we have not as yet all the Light we may reasonably expect hereafter, from more frequent Dissections of morbid Bladders.

THE Stone in the Bladder, and a *Scirrhus* of the *Prostate*, excite so many of the same Symptoms, that Patients under this Disorder are generally suspected to have the Stone; though there are Indications which distinguish the one from the other, but not sufficiently to make Searching needless. I think the principal one is, (when the Symptoms in both Cases are become very bad) that the Motion of a Coach or Horse does not increase the Complaint,

when the *Prostate* is affected, but is intolerable when it is a *Stone* : It also generally happens that the Fits of the Stone come on by Intervals, whereas the Pain from a diseased *Prostate Gland* is more equal ; however, this Rule has its Exceptions sometimes.

WHEN it enlarges, as it does in all the Cases that are not Venereal, it may be felt very plainly with the Finger in the *Rectum* : It also constricts the Neck of the Bladder so much, as not only to render the Issue of the Urine very difficult, but if a Sound be passed into the Bladder, it remains as it were wedged in the Passage, being so tightly embraced for a considerable Length, that the Extremity of it cannot be moved from one Side of the Bladder to the other ; though indeed, for the most part, it absolutely obstructs the Entrance of a Sound or Catheter.

WHEN the Disorder of the *Prostate* is not from an antecedent Venereal Cause, it generally proves mortal, destroying the Patient in a few Months, or perhaps a Year or two : On the contrary, Venereal Diseases of the *Prostate* subsist a much longer time before they become fatal, and are generally distinguishable by their Complication with some other Affections of the *Urethra* ; whereas, in
the

the first Case, the *Urethra* is clear, and the Sound meets with no Interruption till its arrival at the *Prostate*.

ULCERATIONS of the *Prostate* and *Vesiculæ Seminales*, may sometimes attend upon the other Disorders of the *Urethra*; and the Quantities of Matter which we see voided after the Urine by some Patients, plainly show there must be Abscesses in some part or other of the Bladder. M. *Daran* disclaims all Pretence to cure these Ulcerations, declaring his *Bougie* only operates where it falls into contact; but I should think it probable that the *Bougie* may often extend its Influence from the *Excretory Ducts* of these Parts to the Parts themselves, since *Indurations*, and *Fistulas in Perinæo* with little or no *Stricture* of the *Urethra*, are evidently relieved by its Operation on the *Lacunæ*: I am therefore of Opinion, that when the Disease of the *Prostate* arises from a previous Affection of its excretory Ducts, the *Bougie* may be serviceable; when it does not proceed from such a Cause I presume the *Scirrhus* may, in its Nature, resemble the *Scirrhuses* of the Breast, Testicle, &c. which generally have a cancerous Disposition, and in which Case the *Bougie* must be altogether ineffectual.

A FUNGOUS Enlargement of the *Corpus spongiosum Urethræ*, is the last Species of Obstruction I have mentioned, requiring the use of a *Bougie* : But though this is by the generality of eminent Surgeons esteemed the most common kind of Obstacle, the positive Existence of it has not been so clearly demonstrated as one would expect. But it is presumed that in those Cases where the Canal is totally contracted, and yet easily admits a *Bougie* or *Catheter*, it must be owing to such a spongy Expansion of the *Urethra*, which in its Nature may be supposed to recede, as the *Bougie* compresses it. Again, it is thought that in this Enlargement of the *Corpus spongiosum Urethræ*, the Openness of the *Urethra* in Persons, who have been supposed to die of Obstructions there, may be better accounted for from this Hypothesis than any of the others, because, it is more reasonable to imagine (as they say) that this kind of Tumor should subside after Death, than that *Caruncles* should disappear, or *Strictures* relax. How far this Argument may be conclusive, I shall not take upon me to determine ; but it is certain, that in some *Urethras*, the Signs of a contracted Canal often disappear some Hours after Death, whether it be a
fungous

fungous Eminence or a *Stricture* of the *Urethra*. Some Surgeons also judge it evident from the touch of the *Bougie*; and, though I should think this too fallacious a Guide to depend much upon, I must confess that I have often imagined the same thing. Besides, in support of this Doctrine, I shall mention a kind of parallel Disorder in the *Membrana Pituitaria* of the Nose, which I have seen swell and expand so much, as entirely to shut up the Nostrils. What happens to the *Membrana Pituitaria* of the Nose, may likewise happen to the *Urethra*; but I am not quite so sure of the Fact: However, supposing that this Disorder should be frequent, the good Effects wrought upon it by the *Bougies*, will not be difficult to account for; since a continual Discharge from a loaded tumified Part, seems a very natural Means for reducing the Tumor.

THOUGH Women are but little subject to Obstructions of the *Urethra*, because the *Lacunæ* of their *Vagina* are principally concerned in a *Gonorrhæa*, yet, as there are some small *Lacunæ* also in the *Urethra*, which are sometimes affected, the same Consequences may ensue, as in the *Urethra* of Men; accordingly the Case does occur, though very rarely.

rarely. Ulcers of the two *Lacunæ* of their *Prostate* Glands are more common: These Ulcers appear just within the *Vagina*, that is to say, exactly in the Place where the *Lacunæ* are situated. The Treatment of the one and other will be easily understood, from the Rules laid down for the Treatment of Men.

I HAVE now considered all the principal Disorders of the *Urethra*, relievable by the *Bougie*, except the *Fistula* in *Perinæo*, which I shall examine into the nature of, when I lay down the Rules for the Management of the *Bougie*. It remains therefore to be enquired into next, what may, most probably, be the fittest Composition of Plaister for rendering the *Bougie* efficacious.

If the Plaister be too soft, the *Bougie* cannot be introduced with a sufficient Force, either thro' a *Stricture*, or any other kind of Obstacle, to procure the proper Effect with speed: For, if it lie with its Point only against the Obstacle, its Operation will be very tedious, whereas was it stiff enough to pass a little way thro' the Obstruction, it would not only distend, but also quickly bring on a considerable Suppuration from the diseased Part. It is therefore of great Consequence that the

Bougie

Bougie should not give way to a slight Resistance, but should be firm enough to admit of that Force, which may be safely exerted in distending the contracted *Urethra* : For I shall here remark, that though I have a great Opinion of the good Effects produced by the Suppuration, yet, I believe also that the *Bougies* operate by distending the *Urethra* ; and I will go so far, as to give it as my Judgment, that even the Cures, done by M. *Daran*, are wrought partly by *Distension*, and partly by *Suppuration* ; though he himself ascribes them to the *Suppuration* only.

IF the Plaister be too hard, it may, for some time, have the Properties of *Leaden* or *Whalebone* Probes ; and, by its Friction, not only bring on Pain and Defluxions, but even rupture the distended Vessels of the *Urethra* : Again, the harder it is, the less it will soften by the Heat of the *Urethra* ; and whatever Virtues may be supposed to reside in the Plaister, they will not be imparted to the Obstructions, whilst it remains in a hard State ; at least not in that degree, as if the Plaister was melted. Another Inconvenience in very brittle *Bougies*, is their liableness to crack whilst in the *Urethra*, which makes their Extraction painful ; for, not conforming to
the

the Motion of the Body, they break only in that Place, where there happens to be the greatest Stress; the Consequence of which is, that they bend in an Angle at the broken Parts; and, the Edges of the broken Plaister being hard, they tear the tender *Urethra*, as the *Bougie* is withdrawing. But the most important Objection to very stiff *Bougies*, is, the danger of handling the *Urethra* too roughly, especially when in the Hands of unskilful Men. If the *Bougie* be soft, it will rather bend than injure by its Resistance; but it is capable of doing great Mischief when it is hard; for I myself have seen an Example, where by pressing a few Hours every Day against the membranous Part of the *Urethra*, it made way into the *Rectum*; and I suppose the Instances may have been frequent with those Practitioners, who have employed much force in distending the *Urethra*; but no one, that I know of, has been ingenious enough to confess it.

ONE of the chief Ends proposed by the *Bougie* being to procure a discharge from the Ulcers, and the *Lacunæ* of the *Urethra*; the Composition must not be of an astringent nature, as is evident from the Effect of astringent Injections. Desiccative Plaisters are a
kind

kind of Astringent, and by checking the Discharge, which would be brought on by their Irritation, the *Urethra* becomes inflamed, and renders their Action of no effect; besides, that generally through want of a proper degree of Suppuration, their Continuance in the *Urethra* for a sufficient length of Time is insupportable. Wax-Candles are also of this nature; but their Operation is not so strong, as that of some Epuloticks: However, for the most part, they produce so little Matter, that they prove an ineffectual Application. It should therefore seem improper, to use this Species of *Bougie*, unless it be at the Conclusion of a Cure, when we propose to cicatrise the Ulcers.

ESCHAROTIC Powders sprinkled on the *Bougie* in a small Quantity, is a Method of Practice followed by some Surgeons, who disavow the use of *Escharoticks*, and declare they only employ them for the sake of a plentiful Digestion; but as they must erode in some degree, and there are certain *Urethras*, where the least Erosion is very pernicious, I think the use of them may be dangerous; besides, that when they act as an *Escharotic*, they form an *Eschar*, instead of bringing on a Suppuration.

PLAISTERS

PLAISTERS impregnated with a large proportion of *Turpentine* or *Resin*, seem to be too stimulating ; and tho' a certain degree of Irritation is necessary, yet, if the *Urethra* be very much stimulated, a violent Strangury or some other Symptom of the Irritation ensues, which makes the Continuance of the *Bougie* in the *Urethra* intolerable. Besides, when the *Urethra* is very much inflamed, the discharge generally abates, and sometimes ceases, notwithstanding the use of the *Bougie*.

THE Properties then requisite in the *Bougie* are, a sufficient Degree of Firmness, that it may be introduced with some Force ; a Suppleness and Tenacity, that it may conform to the Motions of the Body without breaking ; a lenient suppurative Disposition, to bring on a Discharge without Pain ; and lastly, a Smoothness of Surface, that it may not only be introduced with more Ease, but that it may lie easy in the Passage till it begins to dissolve.

THE best Basis of such a *Bougie*, in my Opinion, is *Diachylon simplex*, which may be rendered efficacious, by a great variety of Mixtures ; but tho' an addition of certain Gums or of the mucilage Plaister, will alone answer the Purpose in some Disorders of the *Urethra*, yet as a long use of *mercurial* Applications is almost

almost a Specific for venereal Ulcers, and has also a powerful Effect on every other Species of stubborn Ulcers; I have chiefly confined my Experiments to Preparations of Mercury.

I HAVE often used white *Precipitate*, red *Precipitate*, *Calomel* and *Æthiops Mineralis*; and tho' the *Precipitates*, at least the red *Precipitate*, are properly escharotic Powders, yet when they are mingled in Plaister, they lose their corrosive Property, in the same manner as *Elixir of Vitriol* does by Dilution; and on this account may be employed with the utmost Innocence. However, it may be proper to observe, that the red *Precipitate* ought to be finely levigated, for Levigation abates the *escharotic* Quality of it, even when in a Powder; and, in this State, I have carried the Proportion of Powder from one Dram to three Drams for every Ounce of Plaister, without producing any Mischief, or without discovering any notable Difference of Operation in the *Bougies*; so effectually sheathed are the *caustical* Qualities of the Mercury, by the Plaister they are mixed with.

BUT, tho' these Remedies often work a Cure in some stubborn Diseases of the *Urethra*, yet a very large Quantity of crude Quick-silver,

silver, added to the Plaister, seems to be better calculated for the Purpose, as Quicksilver, mingled with Axungia or Plaister, is not only an excellent topical Medicine for Ulcers; but has also a peculiar discutient Quality, which it exerts, even when there is no Rupture of the Vessels. This Operation of the Quicksilver therefore, seems to give it greatly the Preference to the other Compositions; because, it not only acts as favourably upon the Surface of the Ulcers, but also exerts its other Virtues on the *fungous* or indurated Parts of the *Urethra*.

PERHAPS we shall discover hereafter the proper Proportion of Quicksilver to the Plaister; at present, I have allotted half an Ounce to every Ounce of Plaister, which renders it excessively more Mercurial than any Plaister now in use. The *Diacbylon* must be made with Oil, and a little *Pix Burgundica* added to it, that it may be sufficiently tenacious: To every Ounce of Plaister I have usually flung in two Drams of *Crude Antimony* finely levigated; from an Opinion, that it greatly conduces to the Smoothness and good Consistence of the *Bougie*; besides, that it may possibly have other Virtues. Upon this Plan the Prescription stands thus,

Diacb.

Diach. cum pice Burgund. ℥ii.

Argent. Viv. ℥i.

Antim. Crud. Pulv. ℥ss.

The Quicksilver, whether it be divided in *Bals. Sulp.* or *Honey*, must not be put into the Plaister till the Moment before the *Bougies* are made ; nor must the Plaister be boiling hot at that time ; lest, by the Heat, the Quicksilver should separate from the Body it is divided in, and fall down to the bottom in form of Globules. When the Quicksilver is mingled with the Plaister moderately hot, Slips of fine Rag must lie ready to dip in the Composition. These Slips must be of different Lengths, from six to nine or ten Inches, and about three Inches broad ; roll them up loosely, and, taking hold of one Extremity with the left Hand, let it fall in upon the Surface of the Plaister, and then draw it out gently ; as it is drawn out, it will unroll and take up a Quantity of Plaister upon its Surface, equal to the Thickness of a silver Groat : Though, to facilitate the unrolling of the Rag, it will be proper to assist its Motion with the End of a Spatula, or any such Instrument : The Plaister must however be so hot, as to soak through and discolour the Cloth,

otherwise it will not make so good a *Bougie*. Several Slips may be dipped into the same Composition, one after another, before it becomes too cold ; but to do this more handily, the Ladle in which it is melted, ought to be broad and flat at the bottom ; and the Plaister must be kept stirring, that it may preserve an equal Consistence. When the Plaister is become too cool to admit of dipping, the Remainder may be spread with a warm Spatula : On one side of the Cloth, it may be spread very thin ; on the other, it must be laid on of the same Thickness, as I have before described when it is dipt : But this will be done in a more exact and even manner, by spreading the Plaister three several Times, than by attempting to make it of the requisite Thickness at one Stroke. Perhaps, those who are dextrous at spreading will always prefer it to the Method of dipping, and it has this Advantage, that the Quicksilver may be mingled with the Plaister in a cooler State, and is therefore less subject to be separated and lost.

If the Cloth be exactly three Inches broad, it will make six *Bougies* of a moderate Size, but their Size may be increased or diminished according to the Occasion : It is generally advisable, that the *Bougie* should be smaller at
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the End which is introduced through the *Strictures*, than at that which is left out at the *Penis*; for that Purpose, many cut off a Part of the oblong Square I have described, in such manner, as to reduce it almost into the Shape of a long right-angled Triangle; but as this way of cutting it weakens the *Bougie* exceedingly, and it is not at all necessary the *Bougie* should be taper from one Extremity to the other, it is much better to cut off a little Slope, of about an Inch and a half long, from the End that is to be passed into the *Urethra*; which will lessen it, where it is requisite to be small; and leave it strong in the other Parts, where the Diminution is not necessary.

THE Plaister taken up by the Cloth when dipt, will have little Bubbles upon its Surface, and not be so smooth, as if it had been spread, therefore an Iron-spatula, a little warmed, may be passed over the Plaister before it be cut into *Bougies*, which will render it more compact and even. It is a much more exact and speedy Method to cut the *Bougies* off with a Knife and Ruler, than with Scissars: When they are rolled up, it must be with that Side outwards, which is covered with Plaister; and they must first be rolled up with the Finger and Thumb as close as possible, before

they are rolled upon a Board or Marble ; for, upon this Circumstance, the Neatness of the *Bougie* very much depends : I think too they may be rolled up more neatly by the Hand than any kind of Machine. Holding the Plaister a little before the Fire, in cold Weather, will facilitate the Rolling ; unless it has been just dipt, when it is not necessary.

I AM apprised how inartificial it must appear, to propose such a compendious Method of Cure as is here laid down, by the use of one sort of *Bougie* ; when it is said, by Men of the greatest Experience, that different kinds of *Bougies* are necessary for the different Stages of the Cure. I will not take upon me to answer this Assertion, by declaring that the Method I have proposed is perfect : It probably may admit of Improvement ; but still I can affirm, that in this Manner I have cured a great Number of Disorders of the *Urethra*, accompanied with *Strangury*, Incontinence of Urine, Suppressions of Urine, and dreadful *Fistulas* in *Perinæo* ; which, I presume, will be a sufficient Motive for us to follow this Method of Practice ; till some one more skilful than myself shall oblige the World with so useful a Discovery.

BUT though the Doctrine I have here advanced is chiefly built on Experience ; yet, from
what

what we see in the Treatment of Wounds and Ulcers, the Event is not mysterious. Indeed formerly, Surgeons hardly dared to believe the Cure of an Ulcer could possibly be compleated, but by a regular Succession of *detergent, digestive, incarnative* and *cicatrising Applications*; at present, this formal *Apparatus* is greatly abridged, and it is known, that a foul Ulcer may be brought into a Disposition to heal, and be even perfectly cicatrised, by the same Remedy: I suspect, however, that the supposed Necessity of the several Classes of *Bougies*, is founded on this ancient Opinion; and on the false Principle, that all the Discharge procured by the *Bougie* is derived from the Ulcers themselves; in Consequence of which, it is concluded, that so long as a suppurative *Bougie* shall be continued, the Ulcer must remain unhealed: But, if am right, I have proved that a great Portion of the Discharge is not from the Ulcers; so that it is possible they may be healed, notwithstanding the *Bougie* continues to be covered with some Discharge. Nevertheless, had we a certain Criterion, by which to judge that the Ulcers were in a kind Disposition to heal; and that the Obstacles of the *Urethra* were radically cured, I have no Objection to desiccative *Bougies*.

HAVING now examined into the Nature of the Disorders of the *Urethra*, and also into the Virtues of those Remedies which seem most suitable for their Relief; I shall next explain in what manner those Remedies are to be applied.

BEFORE a *Bougie* of any kind be introduced into the *Urethra*, it is necessary that it should be daubed all over with sweet Oil; not only for its easier Introduction, but also that it may not stimulate too suddenly, and make its Continuance in the Passage intolerable: In order to introduce it, the Patient may either stand, or lay himself in the Posture we put a Man, that is to be cut for the Stone; in either Case, the Surgeon grasps the *Penis* near the *Glans*, and extends it gently, that the *Urethra* may not be wrinkled; by which Precaution the *Bougie* will meet with no Impediments but those occasioned by the Disease.

IT is generally said that we must judge of the Size of the *Bougie*, that is to be first introduced, by the Largeness of the Stream with which the Patient urines: But this Rule is very fallacious; for it frequently happens, that the Urine is voided in a Stream as thick as a Pack-thread, at the same time that the Obstruction will not admit the Point of the
finest

finest *Bougie*. I suppose this *Phænomenon* may be accounted for, by the Rapidity with which the Urine is forced through the contracted Portion of the *Urethra*, compared with the Slowness with which it advances afterwards through the open Part of it on this Side of the Contraction ; for in Proportion as the Stream thickens, its Velocity diminishes. It very often happens, that in the beginning we cannot employ a *Bougie* too small ; on this Account, the End of it must be round, that it may readily slip over the *Plicæ* of the *Urethra* ; for, if it be pointed, it may be stopt by them before it arrives to the Obstructions ; Sometimes the Obstructions themselves suffer a large *Bougie* to pass over them ; whilst the Extremity of a little one shall be entangled and obstructed by them. It is also from these Causes, that a large Catheter or Sound may sometimes be passed into the Bladder, when a small one cannot ; the Possibility therefore of these Circumstances require, now and then, great Attention.

WHEN the *Bougie* is small, and consequently weak, it is a little difficult for an unexperienced Surgeon to adjust the Force with which it shall be pushed. It is exceedingly desirable that it should enter within the Obstruction ; but in-

stead of penetrating, it generally bends sometimes double, or treble, and sometimes spirally; so that when the *Bougie* is extracted, it resembles a Cork-screw: This last Appearance of the *Bougie* has made it almost universally believed, that the *Urethra* assumes a tortuous Figure when thus diseased; but it seems evidently to be a Mistake; for, if this was the Shape of the *Urethra* itself, one could not make the *Bougie* more or less spiral, by pushing it with more or less Force; nor indeed could so pliable a Substance, as the *Bougie*, preserve that Shape in the Extraction; unless it were taken out by unscrewing it, as we take a Screw out of a Cork. In whatever manner it bends, the Extraction is always painful; and therefore it is of great Importance to desist from pushing it on, when once it begins to bend; for from that Moment the farther Introduction of it is impracticable. To avoid this Inconvenience, it must be passed very gently, and, when it meets with the least Resistance, instead of pushing it straight on, turn it round between your Finger and Thumb several Times, and, as you turn it, press it a little forwards: if by this Conduct it should advance, continue to do the same thing till it stops; if it does not advance, proceed no farther: But as I have
hinted,

hinted, this is a nice Process; for when it bends it seems to advance, and will deceive any one not much accustomed to this Operation.

IF we do not confine the *Bougie* in the *Urethra* by some kind of Bandage, it will be expedient to fasten a Piece of Thread to the Extremity: lest it should insinuate itself into the Passage beyond our reach, and make the Extraction difficult, if not impossible, without an Incision. If we keep it fixed in the *Urethra* with a Cotton-string tied to its Extremity, and then passed round the *Penis*, no other Thread is necessary.

SOMETIMES the *Urethra* is so tender, that the first Application is very painful; but what adds greatly to the Patient's suffering, is the dread of the Operation. On this account, timorous People ought to be treated with Gentleness, and the *Bougie* should be left in only two or three Hours in a Day at first; but this is to be done, either in Compliance with the Tenderness of the Part, or the Apprehensions of the Patient; for, when they are able and willing to suffer it, the *Bougie* may be left in six or seven Hours of the Twenty-four in the Beginning of the Cure: Sometimes it happens, that the *Bougie* is very bearable at first, and becomes more painful after some time; this

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Circumstance demands a Conduct which is to be learnt from Experience only ; for it is difficult to lay down any Rule, by which it may be distinguished what degree of Pain will admit of the Continuance of the *Bougie*, and what forbids the Prosecution of it : But generally the Patient himself will judge whether he can bear it or not ; and the Discontinuance of it may be for one, two, or three Days, according to the Nature of the Symptoms. There are some few Instances, where the same *Bougie* that has already removed a Strangury and other concomitant Complaints, shall, by remaining many Weeks in the Neck of the Bladder, irritate it, and bring on a fresh Strangury. In this Case, the Use of the *Bougie* must be forbore a Day or two, and the Strangury will cease. Some Surgeons have recommended in these Circumstances, what they call a gentle soothing *Bougie* ; but an absolute refraining from all kinds of *Bougies* is, I believe, much the better Method.

If the Patient will submit to wear a *Bougie* nine or ten Hours in a Day, he will, in all Probability, be much sooner relieved than if he wore it only four or five Hours. There are a great many, whose Disorder is so desperate, as to render them unfit for every other Business

Business than that of their Cure. I have had several of these under my Care, who wore the *Bougie* almost the whole Time, Night and Day, without Intermiſſion ; as they withdrew one, introducing another ; and, if it does not ſtimulate too much by this conſtant Application, it is certainly a prudent Step ; for the more Suppuration is procured, and the longer the *Urethra* is kept diſtended, the more likely it is that the Cure will be radical. However, as few Men will ſubmit to ſo exact a Diſcipline, nor indeed does the nature of the Malady abſolutely require it in many Caſes, it will be adviſeable to wear it in the Day, rather than the Night ; as in Bed the Patient will be liable to Erections ; and Erections are accompanied with a much more painful *Cordee*, whiſt the *Bougie* is in the *Urethra*, than when it is not : Beſides, that the *Bougie* does not ſeem to operate ſo kindly, when the *Corpus ſpongioſum Urethræ* is inflated, as when it is flaccid ; but, as I have intimated, there are a great many Examples where it may be wore Night and Day ; the Objection I have here ſuggeſted, not occurring. Two *Bougies* a Day ſeem to anſwer the Purpoſe very well in the generality of Diſorders ; one in the Morning, and one in the Evening ; which may be
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used so early, and so late, as not to interfere with the Patient's Avocations; though in a little time they become so familiar and easy, that many walk about with them in the *Urethra*, and follow their daily Occupations without the least Inconvenience.

IF during the Use of the *Bougies*, the Testicles should inflame, or any feverish Disorder come on; it will be proper, till this Symptom be removed, to suspend the Application of the *Bougies*, at least to leave them only an Hour, or half an Hour in a Day in the *Urethra*, to prevent its contracting again.

To obviate any liableness to inflammatory Disorders of the *Urethra* or genital Parts; it is of great Importance that the Patient should live temperately, and even enter into a cooling Regimen during the Treatment.

WITH regard to the length of Time necessary for the Cure of these Disorders, it will be often imprudent to make any positive Prognostic; for there are not only desperate Cases, to all Appearance, which are relieved in a few Weeks, but there are also seemingly slight Obstructions which do not yield for many Weeks or Months. M. *Daran's* Book furnishes us with some Examples, where the *Bougie* was applied for Excrescencies, *Strictures*

tures and Ulcers, sometimes three, and sometimes four or five Months; the Cure, however, was effected with Patience, in all or most of the Instances: Nevertheless, the greater Number of Cures will be wrought in eleven, eight, nine, or ten Weeks.

I KNOW no Rule for determining when the Cure is effected, but by the removal of every Symptom of the Disorder; for some degree of the Running will generally continue as long as a *Bougie* is employed. If therefore the Patient judges himself well, and feels no Obstruction in the Passage, after having used the *Bougie* a Fortnight or three Weeks longer, for a Confirmation of the Cure, he may desist gradually, wearing it at first only an Hour in a Day, and then two or three times a Week; after which it may be entirely left off. If, after all these Precautions, it should be found that any Gleet remains, or any Obstruction threatens to return; it will be necessary to repeat the Application of the *Bougie* for five or six Weeks. Towards the close of the Cure, it was formerly customary for Surgeons, who practised the Method of Distension, to use very large *Bougies*; but I do not find it necessary, and perhaps they may sometimes by over-stretching prove pernicious.

A PERPETUAL Incontinence of Urine is a great Impediment to the Suppurative Power of the *Bougies* ; for by continually keeping it wet, the Plaister can act but very slowly ; and therefore, I think, it will often be adviseable to make way by force through the Obstruction ; for it sometimes happens, that the Incontinence of Urine shall cease from that Moment the Passage is opened ; provided that a *Bougie* be introduced immediately, upon withdrawing the Sound or Catheter ; but if no *Bougie* be passed, in order to procure a Discharge and preserve the openness of the Canal, the Disease generally returns when the Sound or Catheter is taken out.

I KNOW that some of the most experienced Surgeons are averse to this Method of Violence ; and I myself confess, that it ought to be exerted with great Caution, lest the Instrument should be pushed through the Coats of the *Urethra* ; but when it is used with Discretion, the Cure will sometimes be exceedingly abridged ; for by this Means the *Bougie* will arrive at once through an Obstruction, that perhaps might have required a Month, or five Weeks, to open by so gradual a Suppuration as is brought on by the mere Point of the *Bougie*. I have been led into the Approbation of employing some Violence to
open

open the *Urethra*, by the sudden Advantages I have reaped from it, where I have been necessitated, in a dangerous Suppression of Urine, to make way by force into the Bladder, in order to draw it off and save the Patient's Life.

IN Suppressions of Urine it will be always adviseable to introduce the Catheter, if possible, and indeed to keep it in the Bladder two, three, or four Days ; after which the Canal will perhaps admit a *Bougie* ; and then, as I have intimated, a Suppuration being once procured, it may easily be preserved open. Upon the Supposition that the passing of the Catheter should be impracticable ; besides the usual Methods employed in Suppressions of Urine, I would also recommend the Introduction of a *Bougie* as far as the *Stricture* : In a few Hours it will bring on a Discharge, and may possibly, by that Discharge, relax the *Stricture* or even the Neck of the Bladder, which-ever be the cause of the Suppression ; but I own, I do not much depend upon so sudden an Effect from the Suppuration, as is requisite for the Relief of this Disorder.

THE common event in Suppressions of Urine which do not prove mortal, and when the Catheter cannot be introduced, is this : After the Bladder is distended to a certain degree, it re-

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sists any farther Distension, with a Force superior to that Power which keeps the *Stricture* of the *Urethra*, or the *Stricture* of the Neck of the Bladder contracted ; in consequence of which, the Urine is expelled involuntarily, and by Drops, so that the first Symptom of a Recovery is an Incontinence of Urine. When the Passage is once open, it continues to flow faster than it is brought from the Kidneys into the Bladder, so that the Bladder contracting, recovers its Tone, and the Inflammation of the *Stricture* in the *Urethra*, or the *Stricture* in the Neck of the Bladder abating, the Patient returns into the Situation he was in before the attack. This is often the Case, where no *Bougie* has been employed ; but it is possible, that a *Bougie* by irritating the *Urethra*, may promote the Contraction of the Bladder, and I suppose whenever a *Bougie* produces a sudden Evacuation of Urine, it must be by this means, rather than by the Discharge.

INDURATIONS, and *Fistulas in Perinæo*, are a frequent consequence of Obstructions in the *Urethra*, and in the Neck of the Bladder ; sometimes there are several *Fistulas*, and though they acquire their Name from being supposed to be seated in *Perinæo* ; yet some of them may be also in the *Scrotum*, some near the *Anus*,
and

and others even in the Groin. When there are five or six different *Fistulas* giving issue to the Urine; it is said to have been discovered by Dissections, that they are all derived from one Orifice¹ only, in the *Urethra*; and generally from that Portion of it which is called the *membranous Part*; but though this may be true, where the *Fistulas* have been formed by the bursting of the *Urethra* in a Suppression of Urine, (no very uncommon Circumstance) yet where the Indurations; arising from Obstructions in the *Urethra*, have impostumated and broke, I am grossly deceived, if some of those Abscesses do not lead into different Parts of the Canal.

SOME of these Indurations are amazingly hard; particularly when the *Corporea Cavernosa Penis* are thus affected: I have once been obliged to cut off a part of such a Tumor, which would not yield to the Operation of the *Bougies*, as the other Indurations had done; and I found it of a *Cartilaginous* Consistence. Besides these particular Hardnesses, the whole *Membrana Cellularis Scroti*, and *Penis*, is sometimes indurated, and becomes monstrously enlarged, occasioning a *Phymosis* or *Paraphymosis*; and, what is very singular, these terrible Acci-

¹ Le Dran, 354.

dents often ensue from slight Obstructions in the *Urethra*; but still, the removal of these slight Obstructions proves a means of Cure. At one time, these Obstructions feel like small *Excrescences*; at another, like a Straitness of the Passage, from an Expansion of the whole *Corpus spongiosum Urethræ*; and often, like *Strictures* in different parts of the Canal. But though I have spoke of Instances, where the Obstructions are slight; yet, in the generality of these Cases, they are very stubborn, and require both Time and Diligence to overcome. I have met with an Example, where the *Urethra* has been intirely stopt up, so that no Urine has passed out at the Extremity of the *Penis* for some Years; and yet by Perseverance I have opened the Passage.

It would surprize any Body not acquainted with these Cases, to see what monstrous Tumors subside, and what foul *Fistulas* digest and heal from the mere opening of the *Urethra*, and the proper Treatment of the Obstructions; but there are, however, some *Fistulas* which require a farther Management than the Application of a *Bougie*. Sometimes the Indurations are in too rotten a state to be dispersed, and therefore suppurate sooner or later. When they are fully matured, it is more prudent to

to open them either by Incision or Caustic, than to let them break. Sometimes the *Fistulas* are so large as to require dressing; in which Case, Pieces of *Bougie* proportioned to the breadth and depth of the *Fistulas*, are often the most suitable Application. Sometimes the Edges, and circumjacent Skin of the *Fistula*, are so callous, as to make the Extirpation of them necessary. But in all the Examples where cutting appears necessary, I believe it will be judicious, first to make a Passage, if possible, into the Bladder, and wait the Issue of that Process, before any Operation be performed; because, as I have already intimated, the Effects of opening the Canal are sometimes very wonderful, and will often spare the Knife.

I HAVE had no Opportunity of attempting the Cure of *Fistulas* in *Perinæo*, which have been left after cutting for the Stone. But M. *Daran* speaks of them as manageable by the same Methods: And, whether the *Fistulas* remain open, from a mere Contraction of the Canal; or, whether the Contraction be accompanied with callous Edges, or any fungous Excrescence in that Part, the *Bougie* seems calculated to remove either Cause. I shall observe here, by the way, that Surgeons

in curing those Wounds after the Operation, have not sufficiently reflected that *Fistulas* were, in some Measure, the consequence of a Contraction of the *Urethra*; otherwise, they would in cases of Danger have kept a Catheter a few Days in the Bladders of their Patients, in order to dilate the Passage, and give Issue to the Urine: By this Means they might also have prevented its continual draining through the Wound; which Circumstance conduces very much towards the Confirmation of a *Fistula*.

It may perhaps appear astonishing, that all these dreadful Diseases, which are evidently derived from a venereal Cause, should not absolutely require anti-venereal Remedies to render the Cure complete; but Experience shews that they are not often necessary. These Cases seem in their nature exactly to resemble the *Verruæ*, that arise from the *Prepuce* after a *Gonorrhœa*; which are curable by external Applications, though a Salivation will not affect them: For thus it is with the generality of Disorders in the *Urethra*, and many Indurations and *Fistulas* in *Perinæo*; though these last are more frequently relieved by *Antivenereals*, than where the Complaint is confined to the *Urethra* itself.

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However, it is very possible that they may be complicated with other Pocky Symptoms ; in which Circumstance a mercurial Course will be evidently expedient ; but the Canal should be opened before the Patient is laid down ; though, if the Symptoms are urgent, this Rule may be dispensed with. M. *Daran* says, there is also sometimes a latent *Virus* in the Obstructions, when a Salivation is also necessary ; and he Judges of the Existence of this *Virus* from the Stubbornness of the Disorders ; therefore, if they do not yield in a certain Time to the Operation of his *Bougie*, he ascribes it to this Cause ; and has recourse to *antivenereal* Remedies, which he declares seldom fail to prove successful.

C H A P. V.

Of Cutting for the STONE.

THE great Violence done to the *Urethra*, and to the *Neck* of the Bladder, in Cutting for the Stone by the Greater *Apparatus*, having been often attended with dreadful Consequences, which might be probably avoided, was the Bladder to be opened in another Part of it ; several ingenious Men,

have, since the Beginning of the present Century, applied themselves with Diligence, to discover some Method of Cutting, in which neither the *Urethra*, nor the *Neck* of the Bladder should be concerned.

AMONGST other Contrivances, one was, by an Incision into the Bladder above the *Os Pubis*; and the first Effays made in this way of Cutting, gave the greatest Expectation that it would prove an easy unexceptionable Means of Cure; but future Experiments shewed its Fallibility; and some of the Difficulties which occurred in the Execution of it, appeared so frightful, that it was suddenly disused; and at present, there is no one Surgeon in *Europe* who continues to practise it.

THE Objections to this Method are to be found in several Books, and therefore I shall not repeat them all: But it may be observed, that they are too indiscriminately applied; because there are certain Instances, where we may be sure that some of the most important ones do not take place; and, though they have absolutely discredited this way of Cutting with the present Age, I should not be surpris'd, if hereafter, on particular Occasions, it should be revived and practis'd with Success.

THE most frightful Circumstance in this Operation, is the possibility of a contracted Bladder, which not admitting much Injection, and therefore continuing to lie concealed under the *Os Pubis*, may deceive the Operator, who, in this Case, opens the *Pèritonæum* instead of the Bladder ; in Consequence of which, the *Intestines* protrude, and the Patient generally dies. This Accident alone would be sufficient to condemn the Operation, were we equally exposed to it in every Person that is cut ; but in many Men, we know by Searching, that their Bladder is very large, so that we run no risk of this Misfortune in those Cases ; and therefore the Objection is of no weight, where we are certain that the Bladder extends itself a considerable height above the *Os Pubis*, and will admit a large Quantity of Injection. Another Inconvenience imputed to the high Operation, is, the Difficulty of seizing the Stone when it is small ; and the Impracticability of extracting all the Stone, when it happens to be broke into a great Number of Pieces : But though we cannot always positively determine, by Searching or other Circumstances, what is the exact Size of a Stone ; yet there are a multitude of Instances where we are very seldom mistaken,

when we judge it to be large ; and, as to the Accident of breaking the Stone in the Extraction, though it be possible, yet we are so seldom subject to it in this Method, compared with all the others, that the little danger there is of breaking a Stone in the Extraction, is esteemed one of the most remarkable Benefits of the high Operation.

ANOTHER Objection to the high way of Cutting, are, the Excoriations which ensue from the Effusion of the Urine all over the Skin near the Wound ; but this Inconvenience may, in my Opinion, be very much relieved by Embrocations, or Unguents, or Plaisters, any of which will be a good Defence against the Acrimony of the Urine, in case they are applied before the Excoriations arise.

ONE of the greatest Evils which follow this Operation, are the *Abscesses* and *Gangrenes* of the *Membrana Cellularis* ; and these are ascribed to the Insinuation of the Urine into the Cells of that Membrane, in Consequence of the supine Posture of the Patient, which prevents a free Issue of the Urine from the Bladder : But though I am inclined to believe, that they chiefly arise from the Contusion of the Wound in extracting the Stone ; yet, as
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far as they may be aggravated by the Insinuation of the Urine into those Cells, the Mischief may be very much prevented by the Introduction of a *Canula*, as practised in the Puncture above the *Os Pubis* for Suppressions of Urine.

FROM these Considerations it appears to me, that though the general Objections to the high way of Cutting are very strong ; yet there may be particular Cases where some of the principal Objections cannot be applied ; and it is very probable, that, were both the Bladder and the Stone always large, this Method would, upon the whole, be found preferable to all the others ; as neither a *Fistula*, nor an Incontinence of Urine, can ever happen in this way ; and no degree of Skill can absolutely prevent them, where the Neck of the Bladder is concerned in the Operation.

WHEN the high Way of Cutting was exploded in *England*, the lateral Method was taken up, on the same Principle of making a way into the Bladder without wounding the Neck of it. *Albinus*, who has given us an Account of *Rau's* Method, as he was supposed to have improved it after *Frere Jaques*, says, that he opened the Bladder between the *Neck* and the *Ureter* : But every body now seems to be
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convinced that, either *Albinus* in his Relation, or *Rau* himself in his Supposition, was mistaken; since it is almost impossible to cut the Bladder in that part upon the common Staff, without also wounding the Neck of it ².

BUT though *Albinus's* Assertion was found not to be true, when the Experiment was carefully made, both on dead and living Subjects; yet the very Suggestion that Good might arise from an Incision in that part of the Bladder, has produced another Method of cutting for the Stone, invented by M. *Foubert*, an eminent and ingenious Surgeon of *Paris*, who has given us a Description of the Operation in the Memoirs of the Academy of Surgery, of which the following is an Abridgment.

THE Patient being prepared as in the other Methods; he orders him for some Hours before the Operation to retain his Urine, notwithstanding any Urgings to void it. By this means he proposes to distend the Bladder more effectually than can possibly be done by an Injection; which being flung in faster, than the Bladder is accustomed to receive the Urine from the Kidneys, makes a small Distension very painful. When the Patient can no longer

² *Memoires de l'Acad. de Chir.* 663. Vol. I. Le Dran's *Parallèle*.

resist the Irritation to Urine, a Yoke is put on the *Penis*, to prevent the issue of the Water from the Bladder. Being then placed in the usual Posture for Cutting, an Assistant with a convenient Bolster, presses the *Abdomen* a little below the Navel in such a manner, that by pushing the Bladder forwards, he may make that part of it protuberate which lies between the *Neck* and the *Ureter*. The Operator at the same time, introduces the Fore-finger of his Left-hand up the *Rectum*, and drawing it down towards the right Buttock, pushes in a *Trocar* on the left Side of the *Perinæum*, near the great Tuberosity of the *Ischium*, and about an Inch above the *Anus*: Then the *Trocar* is to be carried on parallel to the *Rectum*, exactly between the *Erector Penis* and *Accelerator Urinæ* Muscles, so as to enter into the Bladder on one side of its Neck: As soon as the Bladder is wounded, the Operator withdraws his Fore-finger from the *Anus*.

THE *Trocar* is longer than a common *Trocar*, and is made with a kind of Handle, that determines it into an upper and a lower Part. On the upper Part of the Canula, is a Groove continued almost to its Extremity: By the means of this Groove some Urine will issue out, when the *Trocar* penetrates into the Bladder;

Bladder ; at least, if he draws out the Perforator a little way, which will serve as an Indication to the Operator that he must not push it any farther : But the principal Use of the Groove is to guide the Incision, after the Perforator is withdrawn ; this Incision must be carried between the above-mentioned Muscles, through the *Skin, Membrana Adiposa, Transversalis Penis, Levator Ani*, and a little Portion of the Ligament that runs into the Neck of the Bladder, from the *Symphysis* of the *Os Pubis* ; and lastly, through the Body of the Bladder at near half an Inch from its Neck, and at the same Distance above the Infertion of the *Ureter*. The length of the Incision through the Skin, is to be above an Inch and a quarter, running obliquely upwards from one sixth of an Inch on the Inside of the great Tuberosity of the *Ischium*, to the same Distance on the Inside of the Seam in *Perinæo*. The length of the Incision in the Bladder itself is to be something more than an Inch.

FOR making the Incision more conveniently, M. *Foubert* has devised a Knife, the Blade of which is fixed into the Handle in such a direction, as to resemble a Clasp-knife a little shut ; by this Artifice, he cuts with much more facility,

facility, than if the Handle lay in a right Line with the Blade : But to conceive rightly of this Operation, one should see either the Instruments themselves, or the Figures of them, which he has annexed to the Description of his Method.

WHEN the Incision of the Bladder is made, he introduces the *Gorget* upon the Groove of the *Canula* ; after which, the Operation is finished as in the other Methods ; only that his *Gorget* is differently contrived from the *Gorget*s which are most in use.

THESE are nearly the Particulars of M. *Foubert*'s Method of Cutting ; but though he has practised it several Years with great Dexterity, if I may judge by the Operation I myself have seen him perform, and, with good Success, according to his own Declaration ; nevertheless he has not yet had the Happiness to persuade any of his Countrymen to adopt it ; and I presume for the following Reasons.

BECAUSE there are many Bladders, which, from the continual Irritation of the Stone, have been so accustomed to discharge the Urine as fast as it flows from the Kidneys, that they become very small ; and at the same time are incapable of a sufficient Distension, either by Injection,

Injection, or a gradual Influx of Urine from the Kidneys : For want therefore of a proper Guidance, it may sometimes happen, that the *Trocar* will pass between the Bladder and *Rectum* ; at other times, as the *Trocar* is very long, even through the Bladder into the *Pelvis*.

M. *FOUBERT* is fully apprised of the Possibility of this Accident, and even admits he himself has met with it : He says, that he laid aside the Method of injecting the Bladder, because it is sometimes not so susceptible of so sudden a Dilatation ; and has ever since let the Bladder fill with Urine before he performed the Operation. In order to render the Bladder capable of holding a sufficient Quantity, where he finds it in a contracted State, he orders his Patient to drink very plentifully of Ptisan, or other innocent Liquors some Days before ; and he declares, that from this Management the Patient will acquire the Habit of retaining a Glass or two of Urine in his Bladder, which is Direction enough for the *Trocar* : And he asserts, that he cannot be deceived in this Circumstance, because, with his Fore-finger in the *Rectum*, he can distinguish the Fluctuation of the Urine, if there be any in the Bladder. But notwithstanding
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M. *Foubert's* Extenuation of this Difficulty, I believe where a Bladder is small, and a Stone very large, which is sometimes the Case, a proper Opening of the Bladder, by means of a *Trocar*, will appear to be precarious.

I FIND this Objection has already been considered; for a certain Author has proposed, as an Improvement on the Operation, that the external Incision should be first made with a Knife through the Skin and *Membrana Adiposa*, between the *Erector Penis* and *Accelerator Urinæ Muscles*; when the Fluctuation will be evident, and the Puncture of the Bladder more certain. Monsieur *Foubert*, however, rejects the Proposition; but, in my Opinion, without sufficient Motives; for in this manner the external Incision may be made to extend below the *Anus*, which, at the same time, dividing the greater Part of the *Transversalis Penis*, will exceedingly facilitate the Extraction of the Stone, and prevent that Contusion which accompanies small Incisions. M. *Foubert* himself speaks of this Contusion; and mentions the Resistance of the *Levator Ani*, and the *Transversalis Penis Muscles*, as great Impediments to the Extraction of the Stone; upon which account,
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he recommends the Incision of these Muscles to be performed upon the Stone whilst in the Forceps, as a final Perfection of his new way of Cutting: But so long as his external Incision shall reach no lower than about an Inch above the *Anus*, which will always be the Case, whilst he uses a *Trocar*; the Parts must necessarily be contused in the Extraction of large Stones, notwithstanding the Measure he here advises.

THE exact Incision of the Bladder seems also to be another Difficulty in the Operation; for what Urine there is in the Bladder being immediately evacuated by the *Trocar*; the Bladder itself will subside, and leave no Protruberance to cut upon; in which Case, it is possible that either the Knife may fail to open the Bladder at all, or may wound it in more Places than one. M. *Foubert* recommends, as an Expedient for accomplishing this Incision, to press down the Extremity of the grooved *Canula*, at the same Moment that you raise the Point of the Knife; that, by keeping that Part of the Bladder steady, it may be cut the more easily; but I doubt that in general the right Execution of this Process will be found too delicate for the greater Number of Operators.

ANOTHER great Evil, attendant upon a Wound of the Bladder in that Part, is the want of a free Egress for the Urine, which insinuating itself into the *Cellular Membrane*, produces Abscesses or Gangrenes which often prove fatal; or if they do not destroy, yet, by lying on the *Rectum*, they produce a Slough there; and thus form a Communication between the Bladder and *Rectum*. To obviate this Mischief, M. *Foubert* proposes the Use of a Canula; but though upon such an Emergency as a *Hæmorrhage* from the *Prostate Gland*, the Application of a Canula may be adviseable, in order to compress the Artery; yet in general I should imagine it a pernicious Practice to press with that Force, which a Canula must exert against the Lips of so tender a Wound, and where the Inflammation has so remarkable a Propensity to degenerate into a Gangrene.

IT would be an Injustice to the Merits of Mr. *Chefelden*, should I omit to mention in this place, that the very first Essay he made on the *Lateral Method*, was designed as an Improvement on *Rau's* Manner, by injecting the Bladder with a grooved Catheter before he made the Incision, and cutting those very Parts, which *Albinus* says that *Rau* cut; and

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which M. *Foubert* recommends to be cut ; so that in fact, M. *Foubert*'s Method differs only from *Chefelden*'s, in the Instruments employed ; and, if I may be supposed to speak without Prejudice, I think where it most differs it is most deficient ; for, as Mr. *Chefelden* performed it, the external Incision was large, and had those Advantages I have enumerated ; the Bulging of the Bladder was perceptible, so that the Opening into it was safely made ; and there being also a long grooved Catheter already in the Bladder, the Incision was enlarged with more Certainty. However, in spite of these beneficial Circumstances, he was obliged to disuse the Operation, from the Mischief done by the Insinuation of the Urine into the *Cellular Membrane*, &c.

It may be gathered from what I have said on Cutting for the Stone ; that how much soever this Operation may have been improved, since the beginning of the present Century, yet that none of the Methods are exempt from some particular Imperfections, I shall not now run a Parallel betwixt the *Old Way* and the *Lateral Way* ; but it appears to me, that the Advocates for the *Old Way*, do at length tacitly admit of the superior Advantages of the *Lateral Method*, having lately recommended the

the Incision of the *Urethra* to be continued in the *Old Way*, quite through the ³ Neck of the Bladder, in order to cut open those Parts, which, they acknowledge, must otherwise be tore open by the Extraction of the Stone.

BUT I shall observe upon this continued Incision, (the *Coup de Maître*, as the *French* term it) that though it manifestly is preferable to a Laceration of the *Urethra*, and Neck of the Bladder; yet it does not answer so well, as the Incision by the *Lateral Method*; because, the Wound is nearer the Angle of the *Os Pubis*, and therefore in extracting a large Stone, we must draw it obliquely downwards, which will necessarily have a Tendency to separate the Bladder from the Ligament, that connects it with the *Os Pubis*; and when this happens, the Consequence, in all Probability, will be dangerous. Besides, the external Incision, notwithstanding this Dilatation, is still small, in comparison of the Incision by the *Lateral Method*; so that it will be much more liable to Contusion from the Extraction of the Stone. Again, by this way of cutting open the Neck of the Bladder, the *Rectum* is much more exposed to be wounded;

³ Le Dran, 309. *Memoires de l'Acad. de Chir.* 422. Vol. I.

because, the Incision being carried on from the *Urethra*, it will necessarily lead to that Part of the Neck of the Bladder that lies upon, and is contiguous to the *Rectum*: but, a more important Objection than any of the others, to the continued Incision, I mean in opposition to the Incision made by the *Lateral Method*, is this; that the Wound in the *Urethra* does not in the least facilitate the Extraction of the Stone, since the Opening in the Neck of the Bladder does all the Service that can be done in this Process; and yet, by drawing the Stone and Forceps through that Portion of the *Perinæum*, great Violence is done to those Parts, and altogether unnecessarily: Indeed now that we know a direct way into the Bladder, it should seem almost as needless to make the Incision in the *Urethra*, where it is practised by the great *Apparatus*, as it would be, to begin the Incision in the middle of the *Penis*, though the Absurdity would then be more striking; and therefore I have mentioned it for the better Illustration of what I have advanced.

AFTER having mentioned these Objections to the continued Incision of the *Urethra* and *Prostate Gland*, I shall observe, that Mr. *Sergeant Hawkins* seems to have fallen on an ingenious

nious Contrivance not only for removing them, but also giving the last hand towards perfecting the Lateral Operation. This he effects by making his *Gorget* to cut on the right side, so that when it is introduced upon the Staff, and pushed on into the Bladder, it necessarily makes an Incision on the left side of the *Urethra* and *Prostate Gland*, and thus avoids the Danger of wounding the *Rectum*: and as the external Incision is to be made in the same manner, as when you propose to open the *Prostate* with a Knife, the Extraction of the Stone will be accompanied with all the same Advantages; but I shall not enter into a more particular Detail of this curious Invention, as it is to be hoped the Author himself will oblige us with an ample Description of the Benefits we have reason to expect from it.

I CANNOT dismiss the Examination of the present Subject, without pointing out some very essential Particulars, in which the *English* and *French* Surgeons differ in regard to this Operation; and though I am apprised that the *French* look upon some of those Processes, in which they differ from us, as so many Articles of Improvement; yet, I believe, they will not appear such, when I shall have stated

my Objections to them. In *England*, an Assistant always holds the Staff, after the Operator has fixed it; by which means the Operator has his left Hand at Liberty; so that he not only can be better assured of having cut the *Urethra*, or the Neck of the Bladder, by feeling the naked Groove with his Fore-finger; but he can also, by the Direction of his Finger, introduce the Beak of the Gorget into the Groove, without the least risk of slipping it on one side. Besides these Advantages, if I am not mistaken, most Men will also make the external Incision more steadily, when they lean with the Fingers of their left Hand upon the *Perinæum*. The *French* Operators, from an Apprehension that an Assistant may displace the Staff, deprive themselves of these Benefits, by holding it with their left Hand; and, in consequence, make the Operation more complex; for not parting with the Staff out of their Hand, till the Gorget is in the Bladder, they are obliged, after the Incision is made into the Neck of the Bladder, to give the Knife to an Assistant, who holds it steadily, whilst the Operator slides the Beak of the Gorget upon the Surface of the Blade into the Wound. I have lately seen several Operations done after this manner

manner in *France*, as dexterously as the nature of the Method would admit ; but from seeing them am so little persuaded of the Propriety of this Practice, that was there some doubt, that an Assistant might through Ignorance move the Staff, I think the Hazard would be worth risking ; but the Fact is, that in Hospitals and in great Towns, there are generally Assistants of equal Abilities with the Operator himself ; and consequently as capable of holding the Staff ; though indeed almost any Surgeon is equal to it ; since no other Talent is requisite, than to keep the Staff in the very Position the Operator places it, till the Beak of the *Gorget* is admitted into the Groove ; when the Operator takes it into his left Hand, in order to accommodate its Motion to the Introduction of the *Gorget*.

ANOTHER Difference in the Manner of Operating, is the Posture of the Operator whilst he makes the Incision : In *England*, we seat ourselves in a Chair of a suitable height to the Table on which the Patient lies ; and in this Situation we are firm, having no Part of our Body on the Stretch. In *France*, the most eminent Operators kneel on one Knee, which seems to be an unsteady, if not a painful Posture ; and does not, as I conceive,

procure us any one Advantage that we do not derive from Sitting.

ANOTHER Circumstance in which they differ from us, is the Posture of their Patients. In *England*, we generally place them almost horizontally, only raising their Heads a little on a Pillow : In *France*, their Bodies are raised so high, as to make about an Angle of forty-five Degrees. I cannot say, I have heard any Reason assigned for this great Elevation of the Body ; but, perhaps, it may be done with a view to promote the falling down of the Stone towards the Neck of the Bladder. I will not take upon me to say, that no good ever arises in this respect from the Elevation of the Body ; though I think that the Difficulty of extracting a Stone, is seldom owing to its distance from the Neck of the Bladder ; and when a Bladder does happen to be large, and the Stone lies towards its *Fundus*, a long Forceps is always a Remedy ; but when a Stone lies in the anterior Part of the Bladder, bulging forwards beyond the *Prostate*, in one of the *Sinuses* of that Part ; the laying hold of it is often embarrassing ; and, if we admit that a Stone may roll about the Bladder easily, perhaps this Posture of the Body will often fling it into one of these *Sinuses* ;

Sinuses : However, the great Objection to this Elevation of the Body, is the incumbent Weight of the *Intestines* ; which being urged forwards by the Cries of the Patient, may push the Coats of the Bladder between the Cheeks of the Forceps ; and if they should be laid hold of together with the Stone, the Consequence would be dangerous, if not fatal ; and I should imagine the Accident very possible ; because the Bladder cannot contract so fast as the Urine issues out of it at the Wound, and therefore falls immediately into a flaccid State.

ANOTHER material Variation, is the Structure of the Staff they cut upon, which has a Stop at the Extremity of the Groove ; whereas ours is open all the way. The use ascribed to the Stop, is to inform the Operator when the *Gorget* is in the Bladder, and to prevent his pushing it too far ; but the Admonition is certainly needless, as the issue of the Urine indicates the Introduction of the *Gorget*, and the Resistance of the Wound prevents its going too far : But the Inconvenience of a Stop may sometimes be very troublesome, especially to an unpractised Operator ; for the Beak of the *Gorget* may possibly prevent the withdrawing of the Staff, if the *Urethra* be very narrow,

narrow, or at least render its Return very difficult; and if the Operator should draw back the *Gorget* quite out of the Neck of the Bladder, to make way for the Return of the Staff, he might afterwards miss the Direction of the Wound, and push the *Gorget* between the Bladder and *Rectum*. On these Accounts it appears to me, that a continued Groove is far preferable to one with a Stop at its Extremity.

THE Make of the Forceps is also an Article of great Importance; for the Success of an Operation will often depend on the Perfection of this Instrument. If the Cheeks of the Forceps be very short, they will not command a large Stone so readily as if they were longer; for not encompassing a sufficient Space of the Stone, it will be very apt to slip away from them, unless to prevent this Accident, it be grasped with a Violence that in all probability will break it. It is true, that if the Teeth of the Forceps are made very large, they will obviate the Inconvenience of the Stone's slipping out of them; but the Largeness of their Teeth is a more material Objection to the make of the Forceps, than the Shortness of their Cheeks; for as many Stones are exceedingly soft, the Teeth, by entering into their Substance,

Substance, will frequently break them, which is an Event of so bad Consequence, that we cannot be too careful in avoiding it. It is also of Advantage for seizing a Stone, which lies in the *Fundus* of a very large Bladder, that the Handles of the Forceps should be likewise long, as well as the Cheeks: But whoever will take a View of the Prints of the Forceps now used in most Parts of *Europe*, will find there are good Grounds for the Criticisms I have here advanced. M. *Le Dran* has lately added an ingenious Piece of Mechanism to his Forceps, which, I hope, will prove a means to prevent in some measure the breaking of a Stone in the Extraction. It is a little Branch of Iron, whose Extremity is bent at right Angles, somewhat resembling a Hook; this Branch of Iron hangs from a Joint on one of the Handles. On the other Handle, there is a range of Orifices, contiguous to each other, for the Reception of the Hook. When the Stone is firmly grasped, the Operator lets the Hook into that Orifice which happens to answer to the wideness of the Forceps; by which Artifice the Stone cannot be more compressed; because the Branch of Iron resists the farther shutting of the Forceps, and consequently the Compression of the Stone.

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THE proper kind of Knife to cut with in this Operation has been the Object of much Attention ; and it is amazing what a Variety of them has been invented, and still continues to be employed by foreign Surgeons : Yet the requisites of a proper Knife seem to be very evident. The Blade ought to be convex towards the Extremity, otherwise the Operator will cut with the Point only, instead of a large Portion of the Edge. The Handle ought to be neither large nor heavy, that the Resistance to the Knife may be more easily felt ; and lastly, the Back of the Blade ought not to be very thin, that it may have a due Weight and a strong Edge ; besides, that the Back being blunt is a Security against wounding the *Rectum*, when we cut the Neck of the Bladder from below upwards. For these Reasons all straight-edged Knives, and all Knives with two Edges seem improper ; though these last are chiefly used abroad : However, it must be confessed that this kind of Knife seems best calculated for their manner of Cutting ; because instead of making three or four different successive Incisions down to the Neck of the Bladder, as we practise in *England*, they first divide the Skin, and then continue to push the Knife forwards, without

without once withdrawing it till the Incision is finished.

THE Knife we employ in Cutting, is almost the only one we use on any Occasion in Surgery ; and I am inclined to believe that by habituating ourselves always to the same Knife, we arrive to a much better Command of it, than if we used several of a different make. It cannot be denied however, that a reasonable Variety of Instruments is an essential Aid to Surgery ; yet it may be observed that this Supplement to the Hand has been so much attended to by most Surgeons, that Dexterity itself has not been sufficiently cultivated ; and it is very remarkable, that in Proportion as the Art of Operating has been improved, the number of Instruments has been generally retrenched. *Dionis* reflects on the Superfluity recommended by *Sculdetus* : Some of the Moderns condemn *Dionis* for the same Excess ; and perhaps the future Generation will discard many of those now in vogue with the present Age ; at least I am apt to believe, that should they attain to a farther Perfection in the art of Operating than we are now possessed of, it will possibly be as much owing to an acquired Dexterity, as to any mechanical Inventions.

C H A P.

C H A P. VI.

Miscellaneous OBSERVATIONS *and*
IMPROVEMENTS.

S E C T I O N I.

On Tumors of the GALL-BLADDER, &c.

A TUMOR of the Gall-Bladder having been sometimes mistaken for an Abscess of the Liver, M. *Petit*, in a Memoir presented to the Academy of Surgery, has attempted to point out the distinguishing Symptoms of the two Disorders; and from thence has taken occasion to make some farther Enquiries into the Diseases of the Gall-Bladder.

AN Inflammation of the Liver (called also an *Hepatic Cholic*) may terminate in various manners; but it frequently ends either by Diffusion, or by Suppuration. Whatever be the Issue of the Inflammation, the Complaints are nearly the same whilst it subsists; that is, a Pain in the region of the Liver, with a hard
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and painful Tumor of the Part ; no Tincture of Bile in the Excrements, and on the other hand, a prodigious Quantity of it in the Urine : During the Suppression of Bile, the whole Skin of the Body becomes exceedingly yellow, and sometimes so in less than twenty-four Hours.

WHEN the Inflammation of the Liver goes off by Discussion, it frequently happens that the *Ductus Cysticus* remains obstructed for some time, after the Secretion of the Bile takes place ; and resisting to its Progress into the *Duodenum*, the Bladder becomes necessarily distended, and forms that Tumor in the right *Hypochondrium*, which from the Fluctuation one might mistake for an Abscess.

IT has been found by Experience, that when the Gall-Bladder has been inadvertently opened, the Effusion of Bile into the *Abdomen*, has generally destroyed the Patient in a few Hours or Days ; unless where the Bladder has adhered to the *Peritonæum* and Abdominal Muscles ; in which Instance, the Incision may not only be safe but expedient : It is of great Importance therefore to determine, whether the Fluctuation felt in that Part at the Crisis of an *Hepatic Cholic*, be the Matter of
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an Abscess, or an Accumulation of Bile in the Gall-Bladder.

WHEN there is a Suppuration, the Pain continues to increase during the Formation of the Tumor, and is of a throbbing Nature : When there is only an Accumulation of Bile in the Gall-Bladder, the Pain suddenly ceases, or at least continues to diminish during the increase of the Tumor. Again, after a Suppuration of the Liver, the Patient is exceedingly low and uneasy, notwithstanding the Abatement of Pain ; whereas he finds himself composed and chearful, when the Tumor is formed by a Discharge of Bile into the Gall-Bladder. The Rigors likewise attending the one and the other are different : In a Suppuration, they last longer and are followed first with a Heat, and then with a Dampness on the Skin : On the other hand, in a Suppression of Bile the Skin is dry. Another Difference is, that in an Abscess of the Liver the Fluctuation comes on gradually ; in a Collection of Bile, it is sudden : And lastly, an Abscess of the Liver does not evidently terminate at a certain Part, but is lost confusedly in the Tumor, being also accompanied with an *Oedema* of the Integuments ; whereas the Tumor of the Gall-Bladder is always circumscribed,

cumscribed, lying under the false Ribs beneath the *Rectus* Muscle.

I HAVE hinted, that though the Opening of the Gall-Bladder is exceedingly dangerous where it remains loose, yet when it happens to adhere to the *Peritonæum*, the Operation may be adviseable. The Gall-Bladder, like the Urinary-Bladder, by excessive Distension is sometimes burst; but if previous to the Rupture, it adheres to the neighbouring Parts with which it falls into Contact, as is usual with inflamed Membranes, it will be proper to make an Incision in the upper Part, lest it should burst inwardly, and evacuate the Bile into the *Abdomen*. There are several ⁴ Examples recorded where it has broke externally, and the Patients by this Accident have done well: These Examples therefore shew the fitness of making such an Opening, where an Adhesion is certain; but what recommends the Operation still more, is the Possibility of extracting a Stone or Stones from the Gall-Bladder, which by their Residence would continue to keep up the Inflammation and the consequential Complaints.

THIS Operation ⁵ was first performed where it was not originally intended; the Surgeon

⁴ *Memoires de l'Academie de Chirurgie*, 155. Vol. I.

⁵ *Memoires de l'Academie de Chirurgie*, 178. Vol. I.

only proposing to cure by Dilatation a small *Fistula* of the Gall-Bladder ; but in examining the Cavity with his Probe, he felt a Stone as big as a Pigeon's Egg which he extracted, and the Patient recovered. It is true, this Operation is not yet established ; but besides the Case here recited, there are several Histories of Patients, whose Gall-Bladders have burst externally, and where Stones have worked out of themselves ; which ought to encourage a skilful Surgeon always to examine, if there are any Stones in the Gall-Bladder, whether the Opening into it be made by Nature or by Art.

THE Symptoms of an Adhesion are, its immobility in every Posture of the Body, and some degree of Inflammation or *Oedema* of the Tumor ; though if these last Appearances are gone off, yet their having subsisted for a time, is an Argument of their Adhesion. The best manner of opening the Gall-Bladder, is by tapping it with a grooved Trocar in its most prominent or thickest Part ; and when the Bile is discharged, the Operator must pass a Probe through the Canula in order to search for a Stone. If he finds one, the Orifice must be enlarged by cutting upon the Groove of the Canula ; after which he introduces his Fore-finger

finger into the Bladder, to be assured of the exact Situation of the Stone; when he finishes the Operation with a Forceps as in the high way of Cutting. If there should be no Stone, he leaves the Canula in the Bladder till the Bile finds a Passage into the *Duodenum*, and the Case becomes nearly the same with the Puncture above the *Os Pubis* in Suppressions of Urine.

S E C T. II.

On encysted and adherent Stones of the Bladder.

MONSIEUR *Houſtet* has laid before the Academy of Surgery a Collection of Cases to shew, that Stones of the Bladder are sometimes contained in Cyſts formed by the Protruſion of a part of its Coats. This Phænomenon has of late Years been ſo much attended to, that every knowing Surgeon is apprized of it, either from his own Obſervation,⁶ or his Reading; but ſtill the Examples are not common. Formerly it was believed that Stones often adhered to the Bladder, and unſkilful Operators generally ſcreened themſelves under this Pretence, when they could not extract the Stone: In proportion as Surgeons

⁶ *Transactions of the Royal Society, Vol. 42. No. 462. Heiſter, 1016.*

improved the Operation of Cutting, and were feldomer baffled in the Extraction, the Notion of adherent Stones was lefs regarded, and at length the moft eminent Operators wholly difbelieved the Fact ; but the poffibility of the Cafe is now fufficiently evinced from the Diffection of feveral Bladders, where Stones have been found in little Cyfts or Pouches ; and there have been a few Inftances, where the Bladder has contracted in that Portion of it near the Infections of the Ureters, fo much as to form two diftinct Cavities, with a fmall Orifice of Communication between them : One of thefe I myfelf have met with where the Stone was contained in the farther Cavity.

It is remarkable that the Opening into the Cyfts is frequently very narrow, fo that the Stone is much bigger than the Orifice of the Cyft ; in confequence of which it is impoffible to lay hold of them with the Forceps, and the Operation neceffarily becomes fruitlefs. The Stones contained in Cyfts, are often as fmooth as though they had rubbed againft each other, and of the fame Figure that Stones generally have, when there are feveral in the Bladder. In proportion as they increafe in Bulk, they feem to diftend the Cyft ; for fmall Stones are not found in large Cyfts ; from whence it may

be inferred, that the Weight of the Stones is the first Cause of this preternatural Figure of the Bladder ; besides, if the Stones themselves did not occasion the Protrusion of the several parts of the Bladder, we should have heard of Encysted Bladders where there was no Stone.

SOMETIMES the Stones lying in these Cysts adhere to the internal Membrane of the Bladder, and I have twice seen in a dead Body an Adhesion of Stone where there was no Cyst ; but these Adhesions are not very strong, and therefore do not much obstruct the Operation ; so that it is possible we may extract Stones that slightly adhere, when we do not suspect it.

I AM afraid we can derive no other Benefit from the Histories of Encysted Bladders, than a Solution of the Difficulty of extracting certain Stones : However, this Difficulty very seldom occurs ; for though I have met with two such Instances after Death, yet in the Multitudes I have seen cut for the Stone, this unlucky Accident never once presented itself. But should there be only one Cyst, and that so near the Neck of the Bladder as to be reached with the Fore-finger, the Point of a Knife may be safely conveyed on the Finger

in order to dilate the Orifice of the Cyst ; and the Extraction of the Stone may in this manner be facilitated.

IT has been thought when Stones do not press upon the Neck of the Bladder, but remain immoveable in any other Part of it, that they do not give Pain ; however, some of the Cases here recited contradict this Opinion : Indeed they do not prove so troublesome when they are encysted, as when they are loose ; nor is the body of the Bladder so painful a Situation for a moveable Stone as the Neck ; for Experience shews, that if we move a Stone from the Neck, either by a *Sound*, or by suspending the Patient with his Head downwards, we sometimes procure immediate Ease. I suppose this may be accounted for, from its touching the Bladder in more Points when it lies in the Neck, than when it is in its Body or Fundus, in consequence of which it must irritate more ; besides that from every effort to Urine, the Pain must be greatly augmented by the forcible Contraction of the Bladder on the Surface of the Stone.



S E C T. III.

Of the E M P Y E M A.

MONSIEUR *Foubert*, in a Memoir presented to the Academy of Surgery (Vol. I. Page 717.) has drawn up the Case of a Person, who after some pulmonary Complaints had a Tumor formed on the right side a little above the *Diaphragm*, between the Cartilages of the seventh, eighth, and ninth Ribs, and the *Cartilago Ensiformis*. He says, that he would have opened the Tumor, had he not been overpowered by the Opinions of other Surgeons, who recommended the waiting for some more evident Motive to the Incision : During this Attendance the Patient died, and upon Dissection it appeared to be an *Empyema* ; the Matter of which pushing forwards, had occasioned the Protuberance just described. The Inference made from this Dissection, is the probability of giving help in such Cases from a Discharge of the Matter.

It appears from the Tendency of this Memoir, that the Operation for the *Empyema*, how much soever it may have always been advised, has not yet been universally established

by Practice. Either the Instances are few in which the Operation is expedient, or they have been almost entirely overlooked ; since it is certain that few Men have performed it.

BUT it must be understood, that I do not speak of that Species of *Empyema*, where the Lungs adhere to the *Pleura*, and produce the Impostumation externally between the Ribs ; but of that, where the Abscess of the Lungs when it breaks, discharges its Contents into the Cavity of the *Thorax*. *Empyemas* of the first Kind are frequent, and every Surgeon has seen them ; but the other Case is more rare, or at least is generally thought to be so. Indeed Abscesses of the Lungs without an evident Adhesion are very common, as we see in Consumptive People, who spit up every Day the Matter generated in the Abscess ; but in this Instance, either the Abscess may not have emptied itself into the *Thorax* ; or if it has, the Matter is absorbed again through the Opening of the Abscess ; and in both Examples, the Operation for the *Empyema* would avail little, as there is no Quantity of extravasated Matter loose in the *Thorax*.

THIS Disposition of the Lungs to cast off the Matter generated either on their Surface, or in their Substance, has inclined many Surgeons

geons to condemn the Operation for the *Empyema* as altogether insignificant ; and I confess, that though I have always had a doubt as to my own Judgment in this Affair, yet having formerly with great Industry fought in vain for Cases where the Operation might have answered, I have also been led to suppose it needless.

HOWEVER, I am now persuaded there are some Abscesses, not only of the *Pleura* and *Mediastinum*, but of the Lungs themselves, which empty their Matter into the *Thorax* on the *Diaphragm*, where accumulating, it at length proves fatal for want of a Discharge ; or if some of it is carried off by the *Trachea*, the Lodgment of the Remainder produces the same Event, though more slowly.

It is in such Circumstances as these that the Operation is adviseable, and where, in all probability, the Evacuation would prove equally successful with those Discharges that are wrought by Nature, either through the *Trachea*, or between the Ribs externally, as in adherent *Empyemas* : And in these Cases we see great Numbers, who live a long while under the Discharge, and some who perfectly recover. I have also lately met with an Instance in a Body I dissected, where the
Ope-

Operation could hardly have failed of Success : It was a large Collection of thin Matter in the left Cavity of the *Thorax*, without the least degree of Ulceration or Inflammation either in the *Pleura*, *Mediastinum* or Lungs. I suppose there had been a previous Inflammation of these Membranes, or of the Investing Membrane of the Lungs, under which Circumstance the Secretion of this Matter had been produced, as in Inflammations of the *Prepuce*, which also yield the same kind of Discharge exactly resembling *Pus*, as I have before mentioned on another Occasion.

MONSIEUR *Le Dran* in his 7 Observations, gives us the History of two Patients on whom he had proposed to perform this Operation, but did not ; and he found upon opening them after their Death, that in all Probability they might have been benefited by it ; but these Arguments are of very little Force, in Comparison of the positive Assertion published by some ⁸ Surgeons, that they have often done this Operation, and with great Success.

SINCE therefore some few Cases may occur, where the Operation is adviseable, it becomes

⁷ *Observations*, 31, 32.
 Lond. 1729. Freke, page 269.

⁸ *Marchetti, page 62. Edit.*

a matter of Importance to decide, by what Symptoms we may be assured of its Propriety. It has been almost universally taught, that when a Fluid is extravasated in the *Thorax*, the Patient can only lie on the diseased Side, the Weight of the incumbent Fluid on the *Mediastinum* becoming troublesome, if he places himself on the well side : For the same Reason, when both Cavities of the *Thorax* are filled with a Fluid, the Patient finds it most easy to lie on his Back, or to lean forwards, that the Fluid may neither press on the *Mediastinum*, nor on the *Diaphragm* : But however true this Doctrine may prove in most Instances, there ⁹ are a few, where notwithstanding the Extravasation, the Patient does not complain of more Inconvenience in one Posture than in another, nor even of any great Difficulty of Breathing.

ON this Account it is sometimes less easy to determine when the Operation is requisite, than if we had so exact a Criterion as is generally supposed ; but though this may be wanting, there are others which will generally guide us with a reasonable Certainty. The most infallible Symptom of a large Quantity of Fluid in one of the Cavities of the

⁹ Le Dran's *Obs.* 217. *Vol.* I. Marchetti, 65.

Thorax,

Thorax, is a preternatural Expansion of that side of the Chest where it lies ; for in Proportion as the Fluid accumulates, it will necessarily elevate the Ribs on that side, and prevent them from contracting in Expiration, so much as the Ribs on the other side : Nay, we read that sometimes the Pressure of the Fluid on the Lungs is so great, as to make them collapse and almost totally obstruct their Action. When therefore the *Thorax* becomes thus expanded after a previous pulmonary Disorder, and the Case is attended with the Symptoms of a Suppuration, it is probably owing to a Collection of Matter : Though the Patient will also labour under a continual low Fever, and a particular Anxiety from the Load of Fluid.

BESIDES this Dilatation of the Cavity from an Accumulation of the Fluid, the Patient will be sensible of an Undulation ; and sometimes the Undulation is so evident, that a Stander-by may hear it quash very distinctly in certain Motions of the Body ; as was the Case with a Patient of my own, upon whom I performed the Operation, but the Fluid in that Instance was very thin, being a serous Matter rather than *Pus*.

1. Le Dran's *Observ.* 211. Vol. I.

AGAIN, it will often happen, that though the Skin and intercostal Muscles are not inflamed, they will become *Oedematous* in certain Parts of the *Thorax*; or if they are not *Oedematous* they will be a little thickened; which Symptoms, joined with the Enlargement of the *Thorax*, and the previous pleuritic or pulmonary Disorders, should seem to render the Operation unquestionably proper. But amongst other Motives to recommend it upon such an Emergency, this is one, that if the Operator should mistake the Case, an Incision of the intercostal Muscles would neither be very painful nor dangerous.

I WOULD advise the Incision to be made between the sixth and seventh Ribs, half way from the *Sternum* towards the *Spine*; which though not the most depending Part of the *Thorax* when we are erect, yet by lying down becomes sufficiently so, to give Issue to the Fluid: But the Fact is, that by opening the *Thorax*, the Resistance of the Fluid is taken off from the Lungs, so that they expand freely; and in their Expansion propel the Fluid wherever it can find a Passage; and in that Instance where I performed the Operation, it rushed out of the Wound I made in that Part, and flew to a great Distance from the Patient.

Patient. If then it be true, that the Action of the Lungs will force out the Matter through any Orifice of the *Thorax*, it will be much more expedient to do the Operation in the Place I have assigned, rather than in the most depending Part of the *Thorax*, (the Place of Election as it is called) because in this Part it is often difficult to perform, and is sometimes attended with troublesome Consequences: But what may be urged most in favour of an Incision in the middle of the *Thorax*, is the Practice of *Marchetti*, who always made the Opening ² between the fifth and sixth Ribs. I have here spoken of Abscesses from internal Causes, but the like Effect produced by Wounds or other external Injuries, will demand the same Treatment; and most of the Rules here laid down will be exactly applicable to those Cases.

² Page 61, 65.



S E C T. IV.

On CONCUSSIONS of the BRAIN.

FROM the Dissection³ of Persons dying of a Concussion of the Brain, it appears that in some, it is accompanied with an Extravasation of Blood ; in others, there is no Extravasation. This Remark has given Occasion to several Surgeons of the Academy to attempt the distinguishing the two Cases, and Monsieur *Petit*, who first suggested the Distinction, has laid down the Symptoms, by which, he says, we may know whether the Concussion is attended with an Extravasation or not ; and consequently whether it be proper to apply, or forbear the *Trepan*. It certainly would be a useful Discovery could the different Symptoms be ascertained ; but, I confess, I do not rightly apprehend the Difference, as it is described and illustrated by the annexed Cases : Indeed we are promised that in M. *Petit's* Treatise of Operations, which the World expects with so much Impatience, that this Point will be more fully handled.

³ *Memoires de l'Academie de Chirurgie, Page 198. Vol. I.*

THE Doctrine laid down is this : That if a Drowiness and Loss of Sense come on the Moment of the Accident, the Case is a mere Concussion ; when they succeed some time after, they are produced by an Extravasation : But I think, we see every Day Examples of an Extravasation on the Brain, where these Symptoms instantly succeed, and therefore the Observation is not conclusive : This the Academy seems to be apprised of, by cautioning us to remember that the Concussion may be a first Cause of a loss of Sense, and an Extravasation a second Cause. But, in my Judgment, this Maxim leaves us quite in the dark, and does not rescue us from the dangerous Tendency of the general Doctrine ; for if we are to forbear the Application of the *Trepan*, where a Loss of Sense ensues immediately, upon the Presumption that there is no Extravasation, and yet in some of these Cases there is an Extravasation, the Consequence must often be fatal.

IN the course of these Considerations on the Disorders of the Brain, there is a very good Rule of Practice proposed by the Academy relating to Abscesses of the Brain ⁴ from external Accidents. They observe that hitherto the

⁴ *Memoires de l'Academie de Chirurgie*, 319. Vol. I.

Moderns have been as tender of making an Incision into the Substance of the Brain, in order to discharge any Matter which may possibly lie latent there, as the Ancients were of wounding the *Dura Mater* for the same end. The Academy therefore furnishes us with several Histories of Cases to prove, that when the Symptoms of an Extravasation, or an Abscess continue to subsist, though neither of them appear on the Surface of the Brain, we ought to push our Enquiry into the Substance of the Brain, by making a Puncture or Incision opposite to that Part of the *Cranium* which received the Injury.

THEY have likewise given us the Histories of some Cases, where Bullets^s have been lodged in the Substance of the Brain for several Years, without any remarkable Inconvenience to the Patient. The chief View proposed in these Accounts is to shew, that how dangerous soever a Compression or Wound of the Brain is, in general, yet that such Events are within the bounds of Possibility; and they also teach us, not to neglect the necessary Means of Cure, notwithstanding the apparent desperateness of the Accident.

^s *Memoires de l'Academie de Chirurgie, Page 314, Vol. I.*

S E C T. V.

On the FISTULA LACHRYMALIS.

AN ingenious Surgeon, Monsieur *De la Forest*, shewed me, when I was at *Paris*, a new Way by which he declares he has cured several *Fistulæ Lachrymales*, without making an Incision into the *Saccus Lachrymalis*; and as he has lately ⁶ obliged the Public with an account of his Method, I shall here give a short Extract of it from the Memoir itself. It is somewhat in Imitation of M. *Anell*'s Manner, who employed Balsamic Injections by the *Puncta Lachrymalia*, in order to deterge the Ulcers of the *Sac* and to open the Obstruction of the *Ductus ad Nasum*; only that M. *De la Forest* passes a *Canula* from the Nostril through the *Ductus ad Nasum* into the *Sac*, and throws his Injection upwards from the Nostril through the *Puncta*.

HE does not always introduce the *Canula* when he flings up the Injection (which is usually twice a Day) but after he has once passed it into the *Ductus ad Nasum*, he leaves

⁶ *Memoires De l'Academie de Chirurgie, Vol. II.*

it there for nine or ten Days, and then exchanges it for a clean one, continuing to do the same thing from Time to Time 'till the *Fistula* is cured by the Injections. The *Canula* is a Semicircle of about an Inch and a half Diameter, with a small Portion of it at the Handle almost straight, so that it nearly resembles the Figure of a Sickle. The Diameter of the Orifice at its handle is one tenth of an Inch, and the *Canula* is made taper through all its length, so that its Extremity is very minute. The Point of the *Canula* when introduced, reaches to the *Saccus*, and the Handle of it lies within the Nostril.

IN recent and slight Cases, he uses no *Canula*, but by a convenient Syringe throws up a Detergent Injection, which passing out at the *Puncta Lachrymalia* carries off the Matter in the *Duct* and *Sac*; and he says, by thus removing the Obstruction, the Cure will be compleated in a few Weeks. Should the Obstruction in the *Ductus ad Nasum* deny Admittance to the Pipe of the Syringe, or should the *Canula* by reason of its Thinness be too weak to be forced up the *Duct*, in that Case he advises the Use of a solid Piece of Silver in the Shape of the *Canula*, to be introduced and left in the Passage a few

Days, in order to dilate it, after which, we are to employ Injections with or without a *Canula*, as we shall judge expedient.

I N Cases where the *Saccus* is ulcerated externally, he mentions the Use of a *Seton*, and says, he has sometimes practised it with Success, but he prefers the *Canula*, as it more readily admits of the Cure of the Wound of the Skin, which, he says is apt to become callous by a long Use of the *Seton*.

ONE would imagine it should be very difficult to introduce a *Canula* by the Nostril into the *Saccus Lachrymalis*; and indeed I found it so in my first Trials upon a dead Body, but the Habit of doing it readily, may be acquired by Practice. However I have not yet experienced this manner of curing a *Fistula Lachrymalis*, and I believe it has not yet been attempted by any but the ingenious Author himself. It remains therefore to be decided by a sufficient Number of Experiments, whether it be so practicable and so beneficial as one would hope, and as M. *De la Forest* asserts.

S E C T. VI.

On the POLYPUS.

MONSIEUR *Levret*, in a Treatise he has lately published on the Nature of *Polypuses* both in the *Uterus* and the Nose, has recommended a Manner of tying them, which he supposes more efficacious than any which has yet been published. The Extirpation of a *Polypus* by Ligature, has been frequently advised by others, and is even of as old a Date as the time of *Hippocrates*, who speaks⁷ of tying a *Polypus* of the Nose; but the Difficulty of performing this Operation has either appeared so great, or has by Experience been found so great, that the usual Method of removing it has been by Extraction with a Forceps.

THE Motive for preferring the Ligature to the Forceps, is the Probability of a *Hæmorrhage* after Extraction, which is described by all Writers, and particularly by M. *Levret*, as exceedingly dangerous, especially in those *Polypuses* which hang down in the Throat.

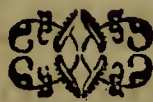
⁷ *Liber de Affectibus.*

This is a very important Consideration, supposing it to be true ; but I cannot help remarking on this Occasion, that what is esteemed a common Accident, has never happened to be once the Consequence where I have performed the Operation myself, or where I have seen others perform it ; however I do not deny the Possibility, though I question the Frequency of it.

It is not easy to give an Idea of the Instruments M. *Levret* has devised for tying the *Polypus*, without a Drawing ; and as he himself has annexed some Copper-plates to his Work, with a Description of them, the Attempt is needless. But besides the manner proposed of extirpating *Polypuses*, he has also enquired particularly into the Nature of them : He affirms that a *Polypus*, consisting of several distinct Portions, has only one Pedicle or Attachment ; and that sometimes there are a great Number of single independent *Polypuses*, which are commonly supposed to be but one. He asserts, that the Extirpation of a part of a *Polypus* by Ligature, will frequently cause the whole *Polypus* to perish ; and when it adheres to the *Membrana Pituitaria*, so as to prevent the passing a Ligature round it, he declares that
by

by separating it from the Membrane with a particular kind of Knife, which he has contrived for that Purpose, he can easily tie it. He approves also of M. *Mann's* Invention of cutting the *Velum Palati*, in order to expose a *Polypus* that hangs down a little way in the Throat, but which cannot well be managed either in the Method of extracting or tying, when it lies concealed behind the *Velum Palati*.

THESE are the most material Points of M. *Levret's* Book in regard to the *Polypus* of the Nose, and, I believe, whoever will examine what he has advanced on this Subject, will find him to be a very ingenious Surgeon, and an excellent Mechanick.



S E C T. VII.

*On the Extirpation of SCIRRHOUS
TONSILS.*

THE Extirpation of *Scirrhus Tonsils* by Ligature, seems to be a Practice, as yet almost entirely confined to *England*, though for no other reason, as I imagine, but because it generally requires some time for the Propagation of an Improvement. It is acknowledged on all hands, that the Application of Escharotics is a tedious, painful, and sometimes an ineffectual Method of Cure: It is likewise granted, that the *Hæmorrhage* which follows upon the Excision of *Scirrhus Tonsils*, is greatly to be feared; but still the tying them is neglected.

BY what I can learn, the other two Methods, for the Reasons I have assigned, are seldom practised; and therefore those People who are unfortunately afflicted with this Malady, have no other Resource than in Palliatives, which rarely produce much Benefit. It is true, the Disorder is not very common, but when an easy and a certain Remedy is once discovered for any Disease, however uncommon

uncommon we may esteem it, it is amazing how frequent the Examples are found ; and, I believe, that was the Operation familiar to every Surgeon, there would be few that would not meet with some Occasion to perform it.

BESIDES, there is not an Operation in Surgery that, in my Opinion, ought to give an Operator so much Encouragement : It is neither dreadful in the Doing, nor melancholy in the Event. All other *scirrhus* Tumours, whether of a *scrophulous* or *cancerous* Nature, are subject to a Relapse ; the Poison either remaining in the Neighbourhood of the extirpated Gland, or at least falling on some other Gland of the Body : In this Case, I have never met with one such Instance ; but the Patient has always been restored to a perfect and lasting Health.

THE continual good Success attending this Operation, is an Answer to a common Objection that has formerly been made to it ; and which perhaps may still be an Objection with some Foreigners ; that it must be dangerous to destroy a Part, by which Nature has been accustomed to fling off any Disorder of the Constitution, lest for want of a Discharge, the Humour continuing to float in the Blood should

should produce a Fever, or some other ill Habit of Body. It was thought that the frequent accidental Inflammations of *Scirrhus Tonsils*, are not to be considered as local Disorders, but, like the Gout, a Distemper in the Constitution, which must be received on some one Part for the good of the whole : However, the absolute Exemption from future inflammatory Disorders, in consequence of the Operation, seems to demonstrate, that the Weakness of the Part is the chief Cause of these Complaints.



C H A P. VII.

Of the C A T A R A C T.

WITHIN these few Years a new Method of treating the *Cataract*, has been attempted by Monsieur *Daviel* at *Paris*, which having been attended with considerable Success; has very much engaged the Attention of the Public, and Experiments are now daily making, that probably will soon ascertain what are the Benefits and Disadvantages of this Invention. It consists in taking away the *Cataract* through an Incision made into the *Cornea*; for which purpose, M. *Daviel* employs a great Number of Instruments suited to the several Processes of his Operation; but as his Method seems capable of great Improvement by being rendered more simple, I have abridged it, and practised it myself upon several People in the following Manner.

HAVING chose as dark a Room as you can well see to do the Operation in, that the Pupil may by that means dilate, and make a freer Opening for the Passage of the *Cataract*; place the Patient before you in the same way as for Couching, either opening the Eye-lids

lids with your Finger and Thumb, or letting an Assistant raise the Upper Eye-lid whilst you yourself keep down the Under Eye-lid; and which ever holds the Upper Eye-lid, must observe not to press against the Globe of the Eye, but the Edge of the *Orbit*. Then with a small Knife a little larger than an Iris Knife, holding the Edge downwards, make a Puncture through the *Cornea* near the Circumference, into the *anterior Chamber* of the Eye, in such a Direction as to carry it horizontally, and opposite to the transverse Diameter of the Pupil: after which, you are to pass it towards the Nose, through the *Cornea*, from within outwards, as near to its Circumference as in the first Puncture.

WHEN you have made the second Puncture, push the Extremity of the Blade one seventh of an Inch beyond the Surface of the *Cornea*, and immediately cut the *Cornea* downwards, drawing the Knife a little to your Right Hand, as you make the Incision: This Wound will be almost semilunar, and nearly parallel to the inferior half of the Circumference of the Pupil, so that the future Cicatrix will obstruct the Light but very little. *M. Daviel* recommends an Incision of nearly two thirds of the Circumference of the *Cornea*;
but

but I believe what I mention will be found more commodious, as so large a Wound as he directs, is apt to give Issue to the Vitreous Humour.

I HAVE here described the Operation as it is practised on the left Eye, but when you are to perform it on the right Eye, I would advise you to seat the Patient on the Ground, letting his Head fall back on your Knees, or against your Breast, which will give you the advantage of using your right Hand ; whereas if you place him before you, it will be necessary to Operate with your left.

It sometimes happens that the Instant the Incision is made through the *Cornea*, the aqueous Humour, the Chrystalline, and some of the vitreous Humour fly out suddenly, when neither the Operator nor Assistant seem to press the Eye ; so that one would suggest it might be owing to a Convulsive Contraction of the Muscles surrounding the Globe of the Eye during the Operation.

WHEN this is the Case, the Surgeon must instantly shut the Eye-lid to prevent the total Evacuation of the vitreous Humour, and at the same time both he and the Assistant cease to press upon the Eye-lids : But if the Chrystalline does not immediately rush out of the
Eye,

Eye, the Operator must press gently with one or two Fingers against the inferior Part of the Globe, till the CrySTALLINE advance through the Pupil into the anterior Chamber, from whence it will generally fall through the Wound of the *Cornea* upon the Cheek. However, should it not readily fall out of the Eye, but remain lodged in the anterior Chamber, I would advise the Operator not to press the Eye in order to expel it, but immediately to stick the Point of the Knife into the Body of it, and extract it contained in its Capsula.

THIS Process, I presume, will be found of considerable Advantage, as it will in a great Measure, remove the Danger of evacuating the whole, or too much of the vitreous Humour, which is apt to follow the *Cataract*, when the Eye is forcibly pressed; though it may be observed, that contrary to Expectation, a large Quantity of this Humour (perhaps a third Part or more) has been sometimes discharged, without any bad Consequence.

I HAVE supposed, that the great Benefit arising from this Method, is the safe and easy Separation of the ChrySTALLINE from the Bed of the vitreous Humour, so that the vitreous Humour shall be less exposed to be evacuated:

cūated ; but perhaps it will also be approved of, as it will always render unnecessary the Measure prescribed by M. *Daviel*, of wounding the *Membrane* of the *ChrySTALLINE* before we proceed to the Extraction of the *ChrySTALLINE* itself ; to which purpose he advises the Flap of the *Cornea* to be suspended with a small *Spatula*, then, with a pointed cutting Needle, to wound the *Membrane* on the Surface of the *ChrySTALLINE*, after which, to introduce the same *Spatula* through the Pupil, in order to detach the Cataract from its Adherences, and then proceed to the Expulsion.

I HAVE here recited these Processes of M. *Daviel's* Operation, which he proposes merely to procure an easy Separation of the *ChrySTALLINE* from the vitreous Humour ; but they are difficult to the Operator, fatiguing to the Patient, and I should hope, altogether needless, if the Knife be used in the manner I have recommended ; for whether by the Capsula of the *ChrySTALLINE*, he means nothing more than the Duplication of the *Membrane* of the vitreous Humour, or whether he means the proper Coat which is also covered by the *Membrane* of the vitreous Humour, in either Case, since the *ChrySTALLINE* advances with so much

much Readiness thro' the Pupil, it will be easily seized by the Knife and removed from the vitreous Humour, with its enveloping *Membrane*; whereas, in making an Incision on the Surface of the *Chrystalline*, and wounding its Capsula, the *Chrystalline* will frequently slip out of the Capsula, which will be left behind; and in fact, this has happened to M. *Daviel*, who advises Pincers and other Instruments, in order to extract the remaining *Membrane*. However I shall here observe in regard to the Capsula of the *Chrystalline* Humour, that, should the Humour slip out of it before it be seized by the Knife, it probably will waste; for, in milky Cataracts, when the *Fluid* is discharged, the *Membrane* in length of time wastes: And in one of my Patients, the *Chrystalline*, from the mere pressure in the Operation, burst out of its Capsula in both Eyes, but in some Weeks it entirely wasted; and in another, though it remained three Months, yet in three Months more, it was entirely wasted; however, if the removing the Capsula should, by future Experience, be found necessary, it may be conveniently done by the Curette (a small Scoop) one of the Instruments M. *Daviel* recommends upon that Occasion: This Instrument
may

may be also used for the Extraction of that Species of *Cataract* which is soft or in Pieces, and for the removal of the *Capsula* of a Bag-*Cataract*, when the Fluid only has been discharged, and the Bag remains behind; but it will be most eminently useful in detaching the *Chrystalline* from the back part of the *Iris*, when any Portion of it happens to adhere, which Circumstance would render the Operation fruitless, without such a Precaution.

Now I am speaking of the Case where the *Capsula* is left behind, I shall observe, that probably one cannot always certainly judge at the time of the Operation, whether it be taken away, or whether it remain; for I suppose that the *Membrane* at the time of the Operation may be transparent, and afterwards become thick and opake; and if this Conjecture be well grounded, the Operator will not be able to discern it, though it should remain; but, to say the truth, the Danger of forcing out the vitreous Humour, has deterred me from an accurate Examination of the Eye, after the Expulsion of the *Cataract*: However it is a matter of no Consequence, whether the remaining *Capsula* be discernable or not, if it be disposed to waste afterwards, as

my Experience hitherto has proved it, since it will be more eligible on that Supposition to leave the Event to time, than to endeavour the Removal by a fatiguing Operation.

I HAVE mentioned the Curette as a proper Instrument to take away the Fragments of a *Cataract* when it is in Pieces; but there is in Nature a *Cataract* so soft, as not to admit of Extraction by this Method: I presume the Case is rare, yet as I have once performed the Operation on the Eyes of a Woman, where this Circumstance occurred, I shall for its Singularity recite the History. She was altogether as blind as those whose *Cataracts* are ripe, but hers had the Appearance of a beginning *Cataract*, being of a light Blue and but little opake. Upon making the Compression, the *Chrystalline* did not advance through the Pupil, as in other Instances: and I found that, if I exerted more Force, I should soon evacuate all the vitreous Humour. It was evident, by the great Distance of the *Cataract* behind the Iris, that this Disappointment did not arise from an Adhesion to the Iris: However I had immediate recourse to the Experiment of cutting through the *Capsula* with the Point of my Knife, hoping, by that means, to have set free the *Chrystalline*; but it gave
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me no Assistance: I then passed the Curette through the Pupil, and turned it several times round, in Expectation of breaking the *Cap-sula*, but found not the least Resistance to my Instrument, so that both Operations proved ineffectual.

I HAVE, in couching, met with *Cataracts* of this nature, but I had no Apprehension that I could not by this Method have discharged the Matter of a *Cataract*, in however fluid a State it might prove.

THERE is one Circumstance in this Operation, of so delicate a Nature, as almost to become an Objection to the Operation itself; I mean the Necessity of making the Incision of the *Cornea* of a particular Length; for if it be too large, all the Humours are subject to be voided; if too small, the aqueous and vitreous will rush out upon pressure, and the *Chrystalline* will remain behind; this Accident is owing to the Fluidity of those two Humours; which admits of their passing through an Orifice that is not large enough for the Passage of the *Cataract*. It is therefore a Precaution of the highest Importance, not to exert much force in pressing the Eye, after you have discovered that the Incision of the *Cornea* is too small; but in that case, to enlarge the

Wound sufficiently with a convenient Pair of Scissars, and then proceed to the Expulsion of the *Cataract*.

COULD we safely make use of a *Speculum Oculi*, perhaps this Difficulty of making a proper Incision of the *Cornea*, might be diminished ; and I am inclined to think, that with due Attention, it might be employed : but then it must be contrived so, as that it shall not compress the Globe of the Eye ; or, if it does, the Operator must be careful to remove it in the Instant the Incision is making, lest by continuing the Pressure after the Wound is made, all the Humours should suddenly gush out.

A MAN that practises this Operation on a dead Body, will wonder at the Difficulty I have supposed in making this Incision ; but when an Eye is in a convulsive Motion, and the Eye-lids are almost shut, as it often happens in the Operation, the Case is very different. The most material Instruction I can give on this head, is to make the first Puncture through the *Cornea* with Quickness ; because when your Knife is once through the *Cornea*, it gives you some command of the Motion of the Eye ; but if you attempt to penetrate the *Cornea* gently and gradually,

gradually, the Eye, upon the first Sensation of the Puncture, will suddenly retire from the Knife, and the Operator will be apt either to carry it betwixt the *Laminæ* of the *Cornea*, or through the *Cornea* upon the Iris, either of which Accidents would incommode, if not defeat the Operator.

IT has not happened in any of the Cases I have treated, that, either during the Operation, or after the Operation, the Iris has been pushed forwards, or insinuated itself through the Wound of the *Cornea*, forming a *Staphymola*; but M. *Daviel* speaks of it as an Occurrence he has met with, and says it may easily be replaced by the same Spatula.

IT seldom or never happens that the Patient escapes an Inflammation in this Method of removing the *Cataract*; whereas after Couching, it is no uncommon Case: in most of the Instances which have fallen under my Care, it has been very considerable, and of long Duration, few recovering in less than six Weeks. It frequently enlarges the Globe of the Eye, and the Eye-lids, and even vesicates the *Tunica Conjunctiva*; but for the most part without any bad Consequence, only that they are very tender to the Touch,

and must be handled gently. I expected this *Optbalmy* would have always excited the same sort of Pain in the Head, as that which accompanies any Inflammation after Couching; but having in a Succession of Instances found my Patients exempt from any considerable Pains in the Head, I was led into an Opinion that Wounds of the *Cornea* had not a Tendency to produce this effect, like a Puncture in Couching, where all the Coats of the Eye, viz. the *Conjunctiva*, the *Sclerotica*, the *Choroides*, and the *Tunica Retina* suffer; but I have, since that time, seen Examples which prove that the Head is liable to be affected by the Operation, tho' perhaps not so frequently.

THERE is one great Evil to be apprehended from a violent and tedious *Optbalmy* after this Operation, and that is, an Inflammation of the Iris, which I have seen in two Patients bring on such a Contraction of the Pupil, as in time to close it, and leave no Passage for the Admission of Light. Some alteration in the Shape of the Pupil after this Operation, is exceedingly common; but the mere Loss of its circular Form is no Impediment to the Sight. This change of Figure in the Pupil is supposed to be owing, either to its sudden

sudden Dilatation from the rapid Motion of the *Cataract*, when expelled, or to some Violence done to it by the Knife during the Operation ; but it is not improbable that the Inflammation of the Iris may also sometimes produce this Effect.

DURING the first Weeks of the *Optbalmy*, the Eye is generally so very tender, that it cannot bear the least degree of Light, and it is often a Month or more, before the Dressing can be safely removed. One would expect an *Albugo* of the *Cornea* should be a frequent consequence of the Inflammation, but it very rarely happens, and I do not recollect to have seen one Instance in which it was the sole Cause of Blindness after the Operation ; though where the Eye has been wasted from a violent and tedious Inflammation, the *Cornea* has also remained white and opake.

WITH regard to the Treatment of the *Optbalmy* which ensues in this Method, I have nothing to propose in particular, the general Rules laid down for managing the Inflammation after Couching, being the most proper in this Case also.

I HAVE here, to the best of my Judgment, communicated all I have yet learnt on the Subject of this Operation, which I

confess is attended with some Difficulties, and some bad Consequences ; but still the success I have had in performing it, has greatly surpassed that which follows upon Couching, and I therefore hoped, that when the Practice of it should have become more familiar, it would have been esteemed a useful and happy Invention : But now after some Trials, it seems rather to have fallen into disrepute ; and I apprehend will be entirely discarded in favour of Couching. To be candid, I perceive that the Difficulty of performing the Operation, is too great to be universally practised ; and as the most dexterous are liable to fail in the requisite Exactness of the Incision, on which the Success entirely depends, they do not choose to adopt a Method, in which they are so much exposed to chagrine, and where their Characters seem to be answerable for the Event, in a much greater Degree than in any other Operation.

FINIS

C H A P. VIII.

Of AMPUTATIONS.

TH E Extremities are subject to many Disorders which require Amputation ; but a spreading Gangrene has been always esteemed one of the most pressing Motives, and indeed amongst the Ancients, to all Appearance, the only one. It has therefore been customary with Writers to consider the Nature of a Gangrene, previous to the Description of the Operation ; and as a right Notion of the Nature of a Gangrene is highly necessary for regulating our Conduct in regard to the Operation, I shall examine into some of the present Opinions on this Article.

TH E old Surgeons treated Mortifications by different Methods, as they took their Rise from different Causes, and were complicated with different Habits of Body. The Moderns seem to have abridged these Distinctions, considering a Mortification to arise either from an external or internal Cause, or sometimes from Cold, which is looked upon as a distinct kind of external Cause. In all the Kinds, it
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is an absolute Stagnation of the Juices, and consequently a Privation of vital Heat: The Intention therefore in the Treatment will be nearly the same, from whatever Cause the Gangrene be deduced; for the Restoration of Warmth, and a brisk Circulation, must be the end proposed: Accordingly, we see in Gangrenes of every kind, spirituous Remedies applied externally, and Cordials internally, are the usual means employed to stop their Progress. Most Gangrenes are exceedingly putrid, yielding a stinking *Ichor*; but sometimes it happens that they are dry and inoffensive to the Smell: This kind of Gangrene is said to be often the Consequence of Gun-shot Wounds, but, I believe, it more frequently occurs in old Age: I have seen it where it has come on very slowly, and at the end of three Months from the first Attack, occasioned no great degree of Indisposition, though it had crept half-way up the Leg. However, some time after, the Patient languished and died.

^s SOME of the Moderns lay down different Rules for the Management of dry and moist Gangrenes; they speak of the Absurdity of using spirituous Applications to a dry Gangrene,

and recommend Emollients only : But, I do not apprehend, we are much benefited by this Distinction ; for though Digestives softened with Oil of Turpentine, may be more proper than Spirits for separating the Sloughs of a Mortification, yet this supposes the Gangrene already formed, and is therefore a Measure rather calculated for the Treatment of a Mortification, than for the Prevention of it. It may be observed, that I use the Words Gangrene and Mortification synonymously ; but in all Books, a Gangrene is defined to be the Beginning of the Disorder ; a Mortification (*Sphacelus*) the last Stage of it ; it is a Division however of little use, and not strictly adhered to by those who mention it ; I have therefore upon all Occasions dropt it, and used them in the Sense they are generally accepted in ordinary Conversation.

A GANGRENE arising from Cold, is said to require a different Treatment from any of the others. Writers assert, that the sudden Application of hot spirituous Remedies, brings on an immediate Putrefaction of all the Parts that are in the least disposed to mortify ; on which account, they order the affected Limb to be rubbed first with Snow (which is something warmer than the Air itself at those Times)

Times) that the Transition from extreme Cold to extreme Heat may not be too quick. In support of their Reasoning it may be remarked, that frozen Plants rot instantly, if they are put into boiling Water ; whereas, if they are first put into cold Water, and thawed gradually, they are not injured ; but whether there be so exact a Conformity in the Parts of an Animal, and the Parts of a Vegetable under this Circumstance, as to make the same sort of Process necessary in the Management of a frozen Limb, I will not take upon me to determine. Perhaps there may be some Prejudice in the Case : However, we cannot be much misled by it, as we do not meet with many Instances of this nature in our Climate ; and where we do, the Patient usually, by his removal into a House or Hospital, undergoes the first Change before the Surgeon visits him ; so that the common Method of Treatment becomes safe upon their own Principles, in that State of the Gangrene. However, in Armies during a Winter-Campaign, this Species of Mortification occurs very often ; it therefore is of Importance to military Surgeons that this Point be adjusted.

BESIDES the vinous Stupes which are now so universally approved of, Sea-water, Urine,

a Solution of *Sal Ammoniac*, *Lixiviums*, and several other Fomentations have had their vogue. Heat also applied in various Shapes, such as hot Bricks, hot Loaves, &c. have had their Advocates. Cataplasms too, of various kinds, have been invented ; but at present it seems to be acknowledged by all Practitioners, that the common Fomentations, with a certain Portion of Spirit of Wine, is at least of equal Virtue with any of the others ; and the *Theracia Londinensis* as powerful a Cataplasm as any now in use.

THESE Remedies are to be employed when we begin to suspect an approaching Gangrene ; tho' they are also necessary when it has manifested itself. But if the Gangrene has affected the Limb to any Depth, they become too superficial, and therefore Surgeons have in general agreed that under this Circumstance, frequent Scarifications should be made into the mortified Part, in order to make room for the Applications, and at the same time to give Issue to the Sanies lodged within the Eschar ; besides, it is imagined that by Scarification, the subjacent live Parts will become less strangled, and being more at Liberty, will consequently be less liable to mortify.

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To answer these Purposes more effectually, we are taught to carry our Incision to the quick ; besides, we are told, that the cutting to the quick is the only way to make the Blood and Spirits return again towards the Place which they had ⁹ abandoned ; but how it produces that Effect is not so clearly explained. For my own part, I confess I have my Doubts in relation to the great Advantages said to be derived from scarifying to the quick : I am jealous that the Incisions often rather exasperate than alleviate, and ¹ *Wise-man*, though a Friend to this Measure, declares, that he has sometimes seen the Tendons wounded by following this Rule too closely ; and where that Accident happens, he says, the Gangrene will be increased. I should therefore imagine that Scarifications carried nearly through the *Membrana Adiposa* will be deep enough for the Purposes mentioned, at least in the tendinous Parts ; as in the Foot, where there are so many Tendons ; and in the outside of the Leg, where it is covered with a strong *Aponeurosis*. Perhaps it may be objected, that by forbearing to wound the Membrane of the Muscles, we leave them under Confinement from the *Stricture* of the

⁹ Guisard, 439.

¹ Vol. 2, 215.

Membrane ; but, I believe, the very Notion of a Strangulation of the Muscles, under this Circumstance, is borrowed from a false Idea of the Structure of their Membrane ; for it was formerly supposed, that each Muscle was contained within its proper Membrane, as in a Sheath ; whereas now we know, that every Fibre of the Muscle is enveloped with that Membrane ; but, from this mistaken Opinion, very possibly might arise the Doctrine of scarifying the Membrane of the Muscles, in order to set them free.

WHEN Scarifications and the other Remedies fail, it has been a Practice in all Ages, from the time of *Hippocrates* down to the beginning of this Century, to cauterize the Eschar : The memorable ² Aphorism he left behind him relating to the Efficacy of Fire, brought the Caution into Use upon almost every Occasion. In Mortifications they believed, that the putrifying Principle or Venom was extracted, with the Juices that were dried up, by the hot Iron : They thought likewise, that the Separation of the Sloughs was exceedingly assisted by this Process ; and, what was more important, they imagined, that the

² *Illi affectus qui Medicamentis non sanantur, ferro sanantur : qui ferro non sanantur, igne sanantur ; qui igne non curantur, hoc existimare oportet insanabiles.*

Life of the Part was quickened by drawing the Spirits to it, and freeing it of all Humidities.

I HAVE here used the very Language of all Writers upon this Subject, and we have hardly in Surgery a more extraordinary Instance of human Fallibility than this ; for after an uninterrupted Practice of above Two thousand Years, this celebrated Remedy, whose Virtues were supposed to be evident both from Reason and Experience, is at length fallen into disrepute, and never employed for stopping a Gangrene. It has also met with the same Fate in regard to many other Distempers, for which it was formerly esteemed a kind of Specific ; but it lost its Ground very gradually : When it was expelled from among the Remedies for a Gangrene, it was still reserved for cancerous Tumors and Excrescencies, from a Persuasion that it would kill any lurking Venom near the extirpated Cancers. And now, that it is no longer used for this Disorder, it continues to be practised upon carious Bones in order to promote Exfoliation ; but, I think, upon no better Grounds than in the other Cases ; so that, in all Probability, it will, by and by, be universally discarded even for the Exfoliation of Bones : In *England* it is already done ; but for the final
removal

removal of these Prejudices, we must allow more time.

THE other Method of destroying Mortifications, either by the potential Cautery, or the Knife, are so deservedly exploded, that I shall not enquire into their Merits : But there has lately started up in *Great Britain* a new Practice of treating this Complaint, which at present makes some Noise in the other Parts of *Europe*, and is therefore worth our Attention. Every body will immediately conclude, that I mean the *Cortex Peruvianus*, which within these few Years has been so exalted for its Virtues in stopping a Gangrene, that the Cautery itself was not more esteemed amongst the Ancients, than is this Medicine by some of the Moderns. I know it will be looked upon by many, as a kind of Scepticism, to doubt the Efficacy of a Remedy, so well attested by such an Infinity of Cases ; and yet I shall frankly own, I have never clearly, to my Satisfaction, met with any evident Proofs of its-Preference to the Cordial Medicines usually prescribed ; though I have a long time made Experiment of it with a View to search into the Truth.

PERHAPS it may seem strange, thus to dispute a Doctrine established on what is called

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Matter of Fact ; but I shall here observe, that in the Practice of Physick and Surgery, it is often exceedingly difficult to ascertain a Fact. Prejudice, or want of Abilities, sometimes misleads us in our Judgment, where there is evidently a right and a wrong ; but, in certain Cases, to distinguish how far the Remedy, and how far Nature operate, is probably above our Discernment : In Gangrenes particularly, there is frequently such a Complication of unknown Circumstances, as cannot but tend to deceive an unwary Observer. Mortifications arising from mere Cold, Compression, or *Stricture*, generally cease upon removing the Cause, and are therefore seldom proper Cases for proving the Power of Bark : However, there are two kinds of Gangrene, where Internals have a fairer Trial ; those are, a spreading Gangrene from an internal Cause, and a spreading Gangrene from violent external Accidents, such as Gun-shot Wounds, compound Fractures, &c. Yet even here we cannot judge of their Effect with absolute Certainty ; for sometimes a Mortification from internal Causes is a kind of critical Disorder : There seems to be a certain Portion of the Body destined to perish, and no more ; of this we have an Infinity of Examples brought
into

into our Hospitals, where the Gangrene stops at a particular Point, without the least Assistance from Art ; the same thing happens, in the other Species of Gangrene from violent Accidents, where the Injury appears to be communicated to a certain Distance and no farther ; though, by the way, I shall remark in this Place, contrary to the received Opinion, that Gangrenes from these Accidents, (where there has been no previous straitness of Bandage,) are as often fatal, as those from internal Causes.

As I have here stated the Fact, we see how difficult it is to ascertain the real Efficacy of this Medicine ; But had Bark, in any degree, those wonderful Effects in Gangrenes, which it has in periodical Complaints, its pre-eminence would no more be doubted in the one Case than in the other. What, in my Judgment, seems to have raised its Character so high, are the great Numbers of single Observations published on this Subject, the Authors of which not having frequent Opportunities of seeing the Issue of this Disorder, under the Use of Cordials, &c. and some of them, perhaps, prejudiced with the common Supposition, that every Gangrene is of itself mortal, have therefore ascribed a

marvellous Influence to the Bark, when the Event has proved successful.

HAVING thus far examined some of the most essential Points relating to the Treatment of a Gangrene; it remains to be considered what is the most expedient time for Amputating, when all Endeavours to stop the Progress of a Gangrene have proved ineffectual. And here Mankind have been unanimous; they have strictly applied to Mortifications, the famous Maxim *Ense residendum*, &c. and the immediate Prospect of inevitable Death without this Remedy, has always prevented the least doubt of its Propriety; but time has at length produced in this Case a most remarkable Revolution: The spreading of a Gangrene, which has hitherto been esteemed the strongest Motive for Amputation, is now become an Argument against it; and some of the most eminent Surgeons in *England* not only defer the Amputation till the Gangrene is stopt, but even till it is advanced in its Separation.

THE best Reason that can be assigned for this extraordinary change in Practice, is, the amazingly ill Success which has attended upon Amputations, under the Circumstance of a spreading Gangrene. All Writers speak of the

the Consequence as being generally fatal, particularly in Gangrenes from internal Causes; and whoever will give themselves the Trouble to read the Histories of these Cases, will find the Assertion abundantly exemplified by Facts. How it comes to pass that the Operation should be so unsuccessful, I shall endeavour to explain. I have already mentioned that some Gangrenes seem to be of a critical Nature, in which Circumstance, the Mortification will spread to a certain Extent; but what that Extent will be, we have no Criterion to judge by, and consequently not knowing where it would have stopt, we cannot determine where to amputate; though I have here supposed that if the Member be cut off, above the Place to which the Gangrene would have extended, the Patient might probably recover: But, I presume, this is seldom true, for till Nature has absolutely flung off the putrifying Mass, that is, till the Gangrene is totally stopt, the Cause of the Mortification will continue to subsist; and notwithstanding the Part on which it would have fallen, is removed, it will necessarily be discharged on some other. Accordingly it has often been found by Experience, that after an Amputation for a spreading Gangrene, the Gan-

grene has immediately seized again on the Stump, or some other Member of the Body ; which is sufficient to shew the Unfitness of amputating whilst the Gangrene is advancing, and proves that the Disorder is not so local, as the ancient Doctrine implies.

AGAIN, if from old Age or any Infirmary of Body, the Blood should become so impoverished, as to lose its nutritious Qualities ; and the Toes should begin to mortify before any other Part, merely as the Circulation in them is more languid, which will therefore consequently dispose them to feel the first Effects of a depraved Blood ; in this Instance also, the Impropriety will be obvious ; for if the Mortification arises from the Cause I have suggested, it is impossible to know so exactly the state of the Blood, as to decide how much of the Extremity would have perished ; and without that Knowledge, it will be rash to amputate.

IF then in the foregoing Cases, it be expedient to wait till the Mortification is stopt ; in Gangrenes arising from Ossified Arteries, the Fitness of it will be unquestionable : It is true, the Complaint is not common ; but still every Anatomist has seen such Ossifications : In this Example, as the Gangrene is imagined to proceed

ceed from a want of Elasticity in the Vessels, the Extent of it will be determined by the Extent of the Disease in the Arteries ; and as we cannot possibly learn to what height they are affected, neither can we possibly determine where the mortifying Cause will cease.

IN Mortifications arising from violent external Accidents, these Arguments are not altogether so applicable ; yet even here, it seems to be equally unsafe to amputate whilst the Mortification is spreading. In these Cases, the Limb is generally inflamed and tumified a considerable Height above the Gangrene, and indeed affected in some degree above the Place of Amputation. Slight however as this Affection appears, Experience has shewn, that it often retains the Seeds of a future Gangrene, which manifests itself again after the Operation ; and what is very remarkable, we read of eminent ³ Surgeons, who have been so little certain of leaving no Taint behind, that when they imagined they were amputating a sound Part they have found it totally mortified, not a drop of Blood following the Incision. If then we are not sure, but that there may be the Foundation of another Gangrene above the Place of Amputa-

³ Saviard, *Observ.* 16.

tion, it becomes one Argument amongst others, why the Doctrine I have laid down should take place in Mortifications from external as well as internal Causes.

BUT what seems to be of much greater Importance in this Consideration, than any of the Reasons I have already alledged, is the ill state of Health that the Patient labours under whilst a Gangrene is spreading, be it of one kind or other; for at this time the Blood is frequently so thin, as to lose even its florid Appearance, and it is not unusual for fatal *Hæmorrhages* to succeed, in Consequence of this thinness, not from the great Vessels, but from an Infinity of small ones in every part of the Stump. The mere danger of a *Hæmorrhage* is then another Objection; but tho' this should be escaped, yet Nature will generally sink under so violent an Operation, where the Blood is deprived of its Balsamick Qualities, and the Strength of the Patient is so much exhausted. On these accounts, the Propriety of deferring the Amputation will be evident, not only till the Mortification is stopt, but till the Separation is pretty far advanced; for by this Measure, under a proper Treatment, the Blood will recover a healthy State and Consistence, and the Patient will be better enabled

enabled to bear up against the Fatigues and Danger of the Operation. During this Attendance, it will be proper to wrap up the mortified Limb in spirituous or odoriferous Bandages, in order to prevent so unwholesome an Annoyance ; or if it be totally mortified, to cut off a large Portion of it, at some distance below the sound Part : By this Method the Stench will be diminished, and the Patient will be much more at his Ease, as I have frequently experienced.

THERE are very few Branches of Surgery more essentially improved since the Times of the Ancients, than the Method of amputating a Limb. ⁴ *Celsus* says, that the Patient frequently died under the Operation ; either from the Loss of Blood, or the Loss of Spirits : How much Surgeons were deterred from the Operation by these Accidents, we have a curious Instance in the Writings of *Albucasis*, who refused to cut off a Man's Hand purely on that Account. He says however, that the Patient in his Despair did the Operation himself, and recovered ⁵. It is no wonder then that we meet with so few Histories of this Operation in the Works of the Ancients, when the Issue of it was often so

⁴ *Celsus*, 497.

⁵ *Page* 244.

suddenly

suddenly fatal ; nor is it strange that Men should have submitted to Amputation for a Gangrene, which so evidently destroys as it advances, rather than for most other Disorders which creep on slowly, and generally leave some hope however ill-grounded.

THE Ancients, and indeed the old Surgeons, laboured under three principal Disadvantages in Amputation, which have been gradually removed by a Succession of Improvements. They were ignorant of the Double Incision, so that the Bone always protruded considerably ; they had no Tournequet, and therefore could not so well command the *Hæmorrhage* ; and lastly, they wanted the crooked Needle, from which we reap such eminent Advantages.

THE first Inconvenience which I have mentioned as a Consequence of the ancient Method of Amputating, was the Protrusion of the Bone : for, making the Incision directly down to the Bone at once, the Muscles and Skin afterwards withdrew, leaving a large Portion of it either naked, or so little covered, that it always perished and made an Exfoliation necessary : This Exfoliation was often a tedious and painful Work, and frequently by long preventing the Cure, reduced the Wound at last to an habitual Ulcer : Or, if the Wound
did

did heal, the Cicatrix proved so large, and the Stump so pointed, that it was liable to ulcerate again. These Mischiefs resulted purely from the want of a lax Skin in the neighbourhood of the Wound ; for Cicatrization is not effected by the mere Generation of a new Skin, but chiefly by the Elongation of the Fibres of the circumjacent Skin towards the Center ; and it is only when the Skin resists a farther Extension, that the Cicatrix begins to form ; from whence it must appear plainly, that the more lax the Skin is, the more readily will the Wound heal, and the smaller will be the Cicatrix : But though the old Surgeons could not apply this Maxim to Practice, so usefully as the Moderns now do, yet they made some Efforts towards it ; for before they Amputated they drew back the Skin with all their Force, that after the Limb was taken off, they might bring a larger Quantity of it over the Extremity of the Bone, and obviate in some degree the Inconveniencies I have stated : However, this seems to have been all the Contrivance they were provided with to answer so great an End ; unless it may be admitted that *Celsus* had a faint Idea of the Double Incision ; and, to speak my own Mind, I question whether it can be doubted. In his Chapter on the
Gan-

Gangrene, he unluckily happens to be even more concise than usual ; but, I think, he expressly says, that after we have cut down to the Bone, we must draw back the Muscles and cut deep round the Bone, so that a Portion of it may be laid bare ; after which it is to be sawed off as close as possible to the Flesh : He tells us, that by this Method of Treatment, the Skin will be so lax as almost to cover the Bone. Perhaps I may have mistaken *Celsus's* Meaning ; if I have not, it has been a great Misfortune to Mankind, that so beneficial an Instruction should have been either overlooked or misunderstood : But it is certain, no Writer has copied him, and the double Incision as now perfected, is the Invention of another great ⁶ Man, to whom Posterity will be always indebted for the many signal Services he has done to Surgery.

It must be confessed however, that notwithstanding we derive such Benefits from the double Incision ; the contractile Disposition of the Muscles, and perhaps of the Skin itself, is so great, that in spite of any Bandage they will retire from the Bone, especially in the Thigh, and sometimes render the Cure tedious.

To remove this Difficulty, I have lately on some Occasions made use of the Cross-stitch, which I would advise to be applied in the following Manner in an Amputation of the Thigh.

TAKE a Seton Needle and thread it with about eight Threads of coarse Silk, so that when they are doubled, the Ligature will consist of sixteen Threads about twelve or fourteen Inches long; wax it pretty much, and range the Threads so that the Ligature may be flat, resembling a Piece of Tape, after which oil both it and the Edge of the Needle: The Flatness of the Ligature will prevent its wearing through the Skin so fast as it would do if it was round, and the Oil will facilitate its Passage: Then carry the Needle through the Skin at about three-quarters of an Inch from the Edge of the Stump, and out again on the Inside of the Stump at about half an Inch from the Edge of it; after which it must be passed through the opposite side of the Stump, from within outward, exactly at the same distance from the Lips of the Wound; this done, the Silk is to be tied in a Bow-knot. With another Needle and Skain of Silk, the same Process is to be repeated in such manner that the
Liga-

Ligatures may cut each other at right Angles. If it is a large Thigh, the Lips of the Wound may be made to approach each other so near, as that the Diameter of the Wound may be about two or three Inches long ; but in this, and in all other Stumps, the Approximation of the Lips will depend upon the Laxness of the Skin, and the Quantity preserved by an artful double Incision : for the Skin must not be drawn together so tight as to put it upon the Stretch, lest it should bring on an Inflammation and Pain.

THE Manner of applying the Cross-stitch after the Amputation of a Leg has nothing particular in it, only that the Threads must be carried between the *Tibia* and *Fibula*, rather than directly over the *Tibia* ; and before the Skin is drawn over the End of the Stump, it will be proper to lay a thick Dossil of Lint on the Edges of the *Tibia*, in order to prevent them from wounding the Skin : However I shall here observe, that as the Skin and Muscles are not so lax in the Leg, as in the Thigh, the Cross-stitch does not procure near the same Advantages upon that part, and therefore is hardly to be recommended.

I HAVE advised the Skains of Silk to be tied with a Bow-knot, that in Case of a *Hæmorrhage* they might be undone, in order to discover the Vessel more easily ; and also, if any Tension should ensue, that they might be loosened for three or four Days, and then tied again when the Suppuration comes on, and the Parts are more at liberty.

PERHAPS it may be objected, that the double Incision is of itself sufficient for answering the Ends proposed by this Measure ; but whoever is conversant in this Branch of Practice, must know, that notwithstanding the lax State of the Skin and Muscles at the time of the Operation, yet, some Days after, they fall considerably back from the Bone, and in the Thigh particularly so much, that no Bandage will sustain them ; the Consequence of which is a proportionable Largeness of Wound, a Tedioufness of Cure, and some degree of Pointedness in the Stump. It may be observed too, that the Strictness of Bandage employed for supporting the Skin and Muscles of the Thigh, is not only painful, but, in all probability, may obstruct the Cure of the Wound by intercepting the Nutrition : For it is certain that by long Continuance it often wastes the Stump ; and, I am jealous,
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it may also be necessary to those Abscesses which sometimes form amongst the Muscles in different Parts of the Thigh.

THE Question then remaining is, whether these Stitches will support the Skin and Muscles more effectually than Bandage, without producing some new Evil, a Point which can only be decided by Experiment. It is true, that this very Method was followed by some of our Ancestors; and the Objections to it have absolutely prevailed over the Arguments in favour of it; for few People now even know it ever was practised. Yet I cannot help imagining, that Caprice may have had more Share in utterly discarding this Method, than Reason and Observation; for it is positively said, by some of the most able and candid Practitioners, to have⁷ succeeded marvellously; and as the Inflammation and Symptomack Fever, supposed to be excited by it, were always relievable by cutting or loosening the Stitches, there does not seem to have been reasonable Grounds for wholly giving up such great Advantages.

BUT if the Objections to it were of force when the single Incision was practised, they diminish exceedingly now that we perform the

⁷ Parey, 30. Wiseman, 230. Vol. II.

Operation by the double Incision ; for though the double Incision does not wholly prevent the withdrawing of the Muscles from the Bone ; yet it abates the Degree of it so much, that they can suffer the Stitches without incurring either Inflammation or Pain, to which they were much more liable after the single Incision. It must be remarked however, that they draw with that Strength, as to make the Stitches wear thro' the Skin and Flesh in twelve or fourteen Days ; but this is done so gradually, that it causes very little Pain or Inflammation ; and tho' they consequently come off with the Dressings, yet by this Time the Skin and Muscles are fixed, and a slight Bandage will be sufficient to maintain them in the same Position.

I CONFESS, however, that these Stitches are an additional Pain to the Operation, tho' perhaps not so bad as one is apt at first to suggest ; for the mere passing of a large Needle through the Flesh without making a *Stricture*, is very bearable, in Comparison of a tight Ligature ; but whatever be the Increase of Pain for the present, the future Ease in Consequence of it is an ample Compensation ; though, if I am not mistaken,

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taken, there is still another Consideration of much higher Importance than any I have mentioned, and that is a less hazard of Life.

F O R the Symptomatic Fever, and the great danger of Life attendant upon an Amputation, does not seem to proceed purely from the Violence done to Nature by the Pain of the Operation, and the removal of the Limb, but also from the Difficulties with which large Suppurations are produced ; and this is evident, from what we see in very large Wounds that are so circumstanced as to admit of healing by Inosculation, or, as Surgeons express it, by the first Intention ; for in this Case, we perceive the Cure to be effected without any great Commotion ; whereas the same Wound, had it been left to suppurate, would have occasioned a Symptomatic Fever, &c. but in both Instances, the Violence done by the mere Operation is the same, whether the Wound be sewed up, or left to digest.

U P O N this Principle, we may account for the Diminution of Danger, by following the Method here proposed ; because, as the Stitches have a power of holding up the
Flesh

Flesh and Skin over the Extremity of the Stump, till they adhere to each other in that Situation; they actually do by this means lessen the Surface of the Wound; in consequence of that, the Suppuration; and in consequence of both, the Danger resulting from the Suppuration.

PERHAPS it may not readily be understood, how a Wound can by any Management be suddenly so much diminished; but it may be better conceived, if we reflect on what I have already intimated, in regard to the healing of a Wound; for in this way we accomplish immediately by Art, what requires a length of Time to be effected in the other Methods by Nature; and with this advantageous Circumstance, that when the Wound is reduced into so small a Compass, the Skin is in a looser State, than when it has not been brought forward by the Stitches; in consequence of which, the Cure will be more quickly compleated; for the looser the circumjacent Skin is, the less will be the Cicatrix, and Cicatrification is by much the slowest Process in Healing. It appears then from the Representation I have here given, that by this Method, we not

only bring the Wound to a small Compass in a less time, but also give it a stronger Tendency to heal entirely. There have been Attempts made within these fourscore Years, to render Amputations less dangerous, by devising a Method of healing the Wound by the first Intention. The first Essay of this kind is to be seen in the *Currus Triumphalis à Terebintho*, printed at London in the Year 1679, though the Merit of the Invention is ascribed either to *Verduin*, or *Sabourin* who each contended for it many Years after : But it is highly probable, that both had the Hint from *England*, since by the Character of the Author, and the Importance of the Subject, I think, the Book must have been popular in those Days. Their Manner of amputating the Leg, was by preserving a large Flap of the Skin, and of the *Gastrocnemius* Muscle, cut into such a Shape, as that when it was brought over the End of the Stump, it might exactly cover the Wound, and being fastened to it by a few Stitches, or Plaister, or Bandage, it might heal by Inosculation. I shall not enter into many Particulars of the Operation, because it is universally disapproved of at present ;
though

though I shall observe, that the frequent Impracticability of stopping the *Hæmorrhage* without Ligature or Caution, and the Danger of confining any Particles of Bone that may happen to exfoliate after the Flap is united, are the two principal Objections to it. M. *Rabaton* and M. *Vermal* have each of them improved on this Plan, by making two opposite Flaps and uniting the one to the other after having tied the Vessels.

MONSIEUR *Le Dran* has described ^s both their Methods, and seems to approve of them, having once performed it himself with Success; but as he does not mention either the Age of his Patient, nor the Limb he took off, one cannot lay very great Stress on the Case.

I BELIEVE, however, that this Operation has not been much practised; though by the best Information I have been able to procure, it has very little answered Expectation where it has been done; but when it has happened to succeed, the Event has confirmed the Doctrine I have laid down, that it is not the Violence done by the Ope-

^s Page 565.

ration, but the Effects of Digestion which excite the Symptomatic Fever, &c. for in these Instances, the Cures are said to have been effected with very little danger or trouble to the Patient.

I COME now to enquire into the Nature of the second Inconvenience which the old Surgeons laboured under; and this was the want of a Tourniquet; but though they had not the Tourniquet to loosen the Ligature at pleasure, whilst the Amputation was performing; yet they employed a Bandage above the place of Amputation, carrying it round with a sufficient Tightness to compress the Vessels, and prevent their Bleeding: But the Misfortune was, that whilst the *Stricture* remained, the Orifices of the Vessels were not visible; and the Moment it was untied or unpinned, the Blood was at full Liberty, and poured out so fast, as sometimes to destroy the Patient before it could be stopt.

THIS Inconvenience gave rise to a new Method of compressing the Vessels, by gripping the great Vessel of the Thigh or Arm with the Hand, and quitting the Gripe from time to time, as we now loosen the Tourniquet,

Tourniquet, in order to discover the Orifice of a bleeding Vessel ; but *Parey* and *Wiseman* say, that there were few Men capable of making an effectual *Stricture* with the Hand, and therefore prefer the ancient Practice of Ligature.

HOWEVER, the prodigious Loss of Blood which attended upon Amputations, was not esteemed so great a Misfortune by the old Surgeons, as it would have been in these Days ; they had an Opinion, that a large Effusion was wholesome, and if they found themselves Masters of the *Hæmorrhage* immediately, they suspended the Operation for some time, that the Stump might bleed plentifully ; believing that the Blood near the mortified Part retained the gangrenous Principle, and that the Evacuation of it was therefore necessary ⁹.

As inconvenient as this Bandage must appear in comparison of the Tourniquet, it was nevertheless a prodigious Improvement on the Method of Amputating followed by the Ancients, who used no Compression at all, as we learn from ¹ *Æginæta*, who says, that *Leonides*, in order to obviate the Danger

⁹ Hildanus, 803.

¹ *Lib. 6. Cap. 84.*

of the *Hæmorrhage*, during the length of Time necessary to saw through the Bone, had ingeniously advised the Incision to be made so far only round the Bone, as not to wound the great Vessels, and then to saw through the Bone before they were divided. The Discovery of the Tourniquet, like many other useful Discoveries, seems so obvious, when we once know it, that one would be amazed it was not thought of by every Surgeon accustomed to Amputations; but it is certain, no Body ever used it till towards the latter End of the last Century. The first Account I meet with of it, is in the ² *Currus Triumphalis*, &c. I have just now quoted, where the Author recommends it as a new Device: But *Dionis* says, that *Morellus* invented this Instrument at the Siege of *Bezançon*; (1674) however it was evidently first introduced into Practice between the Years 1670 and 1680.

IN the Year 1718, M. *Petit* invented another kind of Tourniquet, which being made with a Screw is manageable by the Operator, and does not require an Assistant like the common Tourniquet; it also com-

presses the Artery more partially than the other, and from this Circumstance becomes a very useful Instrument to leave upon a Stump, when we fear a *Hæmorrhage*: It is likewise an admirable Contrivance to stop an Effusion of Blood, till the Surgeon can prepare himself, when in Engagements, during the Heat of Action, he cannot possibly operate so fast as the Occasions present themselves; and on this Account it may be remarked, that every military Surgeon should be furnished with five or six of them. After having said thus much in favour of *Petit's Tourniquet*, I must also confess, that where we have the Advantages of an Assistant, I have found the common Tourniquet more handy, and therefore always employ it in Amputations rather than the Screw Tourniquet.

ANOTHER Defect in Amputations, till the Establishment of the Needle took place, was the Difficulty of stopping the Blood, though a Multitude of Applications had their vogue for Infallibility one after another, as is usual where an absolute Specific is unknown: But the actual Cautery was certainly the most to be depended upon, and
was

was therefore through a Succession of Ages down to our own Days, more frequently employed than any of the other Means. We read, however, of several Objections that were started against this Practice, even when it most prevailed; among others, it was said, that if the Cautery was too hot, the Eschar would drop off immediately; and if it was not sufficiently hot, the Orifice of the bleeding Vessel would remain open; in both which Cases the *Hæmorrhage* would continue; and, I suppose, it was difficult to ascertain the proper degrees of Heat, because it was admitted on all Hands, that several died under the Operation from this Cause ³.

BUT besides the Surgical Arguments that were offered against it, the Horror created by a red-hot Iron begat in some Men an invincible Antipathy to the Method; in Consequence of which, strict Bandage, powerful Astringents, potential Cauteries, and even such poisonous Applications, as Arsenic and corrosive Sublimate, were made use of by some Surgeons: The dreadful Effects of this

³ *Currus Triumphalis, page 14.*

last Application may be easily gueffed ; but amongst many Observations recorded of its pernicious Tendency, there is an Account of nineteen Men, who, one only excepted, all died after Amputation, and, as it was supposed, chiefly from the poisonous Quality of the Sublimate ⁴.

THE great Danger and uncertainty attending these Methods of stopping the Blood, having at last opened the Eyes of several eminent Surgeons, the Use of the Needle and Ligature has by Degrees crept into Practice : But some of the Moderns still continue to believe with our Ancestors, that a free Use of the Needle must necessarily be attended with Inconvenience. I shall therefore enquire into the Grounds of this Opinion, in a short Dissertation on the Needle and Ligature, &c.

AMBROSE PAREY was the first who in these latter Ages attempted to explode the actual Cautery, and establish the Ligature of the Vessels. In all Amputations he applies them by the means of an Artery Forceps ; and advises us to comprehend some Portion

⁴ *Currus Triumphalis, page 10.*

of the surrounding Flesh within the Ligature, rather than to tie the Vessel alone, as it will more readily consolidate under this Circumstance; but in case the Ligature should drop off, or fail in any manner, he then recommends the tying up the Vessel with a Needle and Thread, in a different manner from what is practised in these Days; for the Needle he employs is straight, which Circumstance must have rendered it very difficult to manage, and was the reason why he was under the Necessity of passing it always through the Skin, in that Part of the Stump which was nearest to the bleeding Vessel: And yet, what is very remarkable, in his Account of the Sutures he recommends a crooked one in the sewing up a deep Wound, though he has not adopted it in the Ligature of the Vessels, where it is so infinitely preferable to a straight one.

It is observable too, that though he asserts his Ligature never once failed where he used the Needle; yet in Amputations he seems never to have employed the Needle, but after a Disappointment from the Use of the Forceps.

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HIS Invention of this Method he imputes to the Favour of Providence, for, he says, he never saw it practised, nor ever heard of it; except that, in a Passage of *Galen*, he had read, there was no speedier Remedy for staunching the Blood in fresh Wounds, than to bind up the Vessels towards their Roots, which Doctrine he thought might be applied to the Vessels of an amputated Limb.

HE reflects with great Horror upon the usual Method of stopping the *Hæmorrhage* by actual Cauteries. The Pain from the Application of Fire he describes as most excruciating, and productive of the most dreadful Symptoms, so that scarcely one third of those who underwent this Operation survived it, and some died even in the very Operation. Besides, it often happened, that the Eschar dropped off before the Extremities of the Arteries were closed; whence new Effusions of Blood, and consequently as frequent Repetitions of the Caution, which, if it proved effectual as to the *Hæmorrhage*, still occasioned a Destruction of the Parts near the Bone; and laying a great Portion of it bare, left the Patients without hope
of

of a Cure, being obliged for the remainder of their wretched Lives to carry about an Ulcer, which, to complete their Misery, absolutely prevented them from wearing a wooden Leg.

⁵ IT is said of *Parey*, that he did not understand *Latin*, and one would believe it must be true, otherwise I think he could not but have read in *Celsus* ⁶ a very positive Recommendation of the Ligature. Indeed *Celsus* speaks of the Ligature of the Vessels so frequently, and with such Familiarity, that the use of it should seem to have been common in those Days; nay, he expressly prohibits the actual or potential Caution, unless the Vessel be so situated that it cannot be tied.

PAREY, after the Publication of his new Invention, was attacked with great Vehemence by some of his Contemporaries, who eagerly defended the use of Fire, the Virtue of which had been delivered down from the Ancients as almost sacred in many Disorders: He was weak enough, upon this Occasion, to justify his Practice by Au-

⁵ *Vide* Goelickium.
19, 22, 24.

⁶ *Lib. 5. Cap. 26. Lib. 7. Cap.*

thorities from *Hippocrates*, *Galen*, *Avicenna*, and many other Writers who speak slightly of the Ligature ; by this Measure he would have given away the Glory due to his Discovery, but it was not in his Power, either to benefit his Cause, or injure his Reputation by this Proceeding. It was notorious that the Surgeons, for many of the preceding Ages, had used the actual Cautery, and however the Ligature might have been practised in *Celsus's* time, it had not been much attended to since, though ⁷ *Albucasis* likewise mentions it ; so that the Passages he refers to, in the Writers after *Celsus*, were esteemed of no great weight, being perhaps considered only as a few Exceptions to general Rules, or, if observed at all, rather as speculative than practical Doctrines.

IT remained therefore to be decided by the future Success, whether this Method should stand or fall ; and though perhaps there never was a contested Point so clear in itself as this, yet it has undergone the common Fate of useful Inventions ; it has been opposed and abused. But, in all Probability, it will at last be more generally esta-

blished, though at present it is not received with that universal Acceptation one would wish and expect.

F O R the Objections which arose immediately against the Ligature of the Vessels upon any Occasion, or under any Circumstance whatsoever, are nearly the same which prevail with some of the Moderns against an unlimited Extension of its Use ; so that though they employ the Needle in Capital Operations, yet it is done sparingly, abridging the Application of it to two or three of the largest Vessels, and stopping the others by Compression, Styptics, or Escharotics.

T H E Objections urged against this Method, besides its supposed Uncertainty, were its Tedioufness in comparison of the Cautery ; the Pain of the Puncture, which they pretend to equal that of the Cautery ; and the Danger resulting from the Puncture. They believed, that if the Needle pricked any nervous Part, or the Nerve itself, an Inflammation would necessarily follow ; from the Inflammation, Convulsions ; from Convulsions, Death.

W H E N

WHEN we find these Prejudices so eagerly embraced by the most eminent Practitioners of the succeeding times, and amongst others by *Fabricius ab Aquapendente*, and ⁸ *Hildanus*, whose Writings were esteemed almost as Oracles during the last Century, it is not wonderful the Establishment of this Method should be reserved for our Days.

I CANNOT find in all the Works of ⁹ *Aquapendente*, that he ever used a Needle ; and though he speaks of the Ligature and Forceps, it is but rarely that he applies it ; nay, he argues against the use of them in the following Quotation from *Galen*. (*Lib. 14. Meth.*) *Quod si laqueis tentes arterias ligare, sympathiciæ oboriuntur, id est, affectiones per Consensum.*

AND that the Cautery was his Remedy against an Effusion of Blood, we learn, amongst other Proofs, from his manner of amputating a Breast, which he advises to be done with a red-hot Knife, or a sharp Knife made of Horn, or Wood, dipt in *Aqua Fortis*, by which Artifice he supposes the Vessels will be cauterised as the Incision advances ¹.

⁸ *Hildanus, Page 812.* ⁹ *Page 86.* ¹ *Vide also Hildanus, Page 803, 804, 813, who advises the same Method.*

IT is true, that in many Parts of his Works he gives us a lively Picture of the deplorable State of Surgery with regard to Amputations. He acknowledges the dreadful Uncertainty they were under of stopping the Blood by the actual Cautery ; and, chiefly on this Account, recommends an Amputation of a gangrened Limb to be made an Inch, or an Inch and a half below the Extremity of the Mortification.

WITHIN these last fifty Years this barbarous Practice has by degrees fallen into Disuse, both in *France*, and *England* ; but it is not absolutely discarded in every Part of *Europe*. The learned and ingenious *Heister* is so far from totally rejecting the actual Cautery in great Effusions of Blood, that he seems to extenuate the Cruelty of it ; granting, however, that it is generally ineffectual in Wounds of the crural or brachial Artery ; and therefore in these Instances recommends the Ligature as most safe ².

I HAVE taken notice of the Disuse of the Cautery in *France* as well as *England*, though the *French* have not all of them substituted

² Page 78, Vol. I. Page 499. But he says that the *Moderms* do not approve of it, because the Eschar often falls off after the third Day.

the Needle, wherever the Fire was before demanded ; but have supplied other means in common with the Needle.

³ M. *GUISARD* says, that in the Use of the Ligature it is necessary to enquire, whether there be a Nerve near the Vessel to be taken up ; in which Case it ought to be put out of the way, lest it should be laid hold of with the Flesh ; for, if it should be tied up with the Vessel, it would cause excruciating Torment to the Patient, and perhaps bring on a Dilirium or Convulsions.

⁴ M. *LE DRAN* says, there are three ways of stopping the Blood : The first is by a Button of Vitriol, the second by a Button of Allum, the third by the Ligature ; each of these Methods has its Advantage and Disadvantage. The Vitriol is very apt to dissolve, and spreading, cauterises all the neighbouring Parts : The Allum being only styptical is not so much to be depended on against a fresh *Hæmorrhage* ; and the Ligature, though the most secure, is liable to this Inconvenience, that it is very difficult not to tie the Nerve accompanying the Artery, which in a few Days brings on Convulsions that oblige

³ Page 319.

⁴ Page 559.

us to cut it off. In the subsequent Lines he goes on to inform us, what are the different Circumstances which indicate the use of these several Methods.

IT appears then from the foregoing Specimen, that though they all acknowledge the superior Efficacy of the Needle, there are some who still adopt it under certain Limitations. The greater Part maintain avowedly the original Opinions, while others seem awed by them, where they do not confess their Fears. Nothing would therefore tend more to the Perfection of Surgery, than the Removal of these Apprehensions ; because there is no Branch of the Business so common as this, at least where the Health and Life of the Patient depend so much on one particular manner of Treatment, in preference to all others.

IT was formerly found by Experience, that if the *Eschar* fell off from a large Vessel in a few Days after the use of the actual Caution, the *Hæmorrhage* generally returned ; a Circumstance admitted to be very common. Now, if the actual Caution was attended with this Consequence, how much more liable to the same Inconvenience must
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the potential Caутery be, which, though it acts in nearly the same manner, does not form so deep and so hard a Crust, and will therefore be more readily disposed to drop off before the Extremity of the Vessel is consolidated: but if the potential Caутery be uncertain, all styptical Remedies must necessarily be more so.

I SUPPOSE it will be said, that the potential Caутery is, in these times, only recommended for smaller Vessels, after tying up two or three of the largest; but every Practitioner of great Experience knows that where six, seven, eight, or more Ligatures are employed, we often see a fresh bleeding from the dilated Vessels when the Symptomatic Fever rises high: Nay, notwithstanding the great Profusion of Ligatures practised in *England*, we never think ourselves absolutely secure against another *Hæmorrhage*: How frequently then must this Accident happen where only one or two of the principal Vessels are tied?

IT is true, that to obviate these fresh Effusions of Blood after an Operation, Compression of every kind is prescribed: by the Hand, against the Extremities of the Vessels; by

Bandages round the Limb, and sometimes even by the Tourniquet. Now it must be granted that a Bandage may be applied with that Influence, as to prevent the least Discharge of Blood ; yet in this Case, the *Hæmorrhage* is not restrained by a partial Stricture of the bleeding Vessel, and at its Extremity only : but by an universal Obstruction of the Circulation in that part of the Limb below the Bandage. Of how dangerous Consequence such an Obstruction may prove, after a Continuance of many Hours, needs not much Argument to evince ; especially when we consider, that in general, the Patient labours under an impaired Constitution ; and perhaps too, in some Instances, the Part itself where the Obstruction is brought on, may, from its Neighbourhood to the diseased Member, be more particularly unfit to suffer this temporary Stagnation. ,

BUT, what is very singular, it happens that those Operators who employ the Ligature so sparingly, from this horrid Apprehension of compressing the Nerves, incur nearly as much Danger, if there be any, from the few they apply, as those who use the Needle wherever they discover a bleeding Vessel ; for the
principal

principal Nerves are so contiguous to the two or three Arteries which they do tie, that it is almost impossible to take up a Quantity of Flesh with those Vessels, but the Nerves must also be comprised within the Ligatures. It follows then, from this State of the Fact, that those partial Friends of the Needle, so far as they use it, incur the Inconvenience they suppose it subject to; whilst, at the same time, they are restrained by their Fears from the Prosecution of it, where it is so little liable to their own Objection.

AND that these dreadful Consequences from the Ligature of the Nerves are imaginary, may be understood from the following Reflexions: That it is only the Extremity of the divided Nerve that is tied, and which would, in the other Method of Applications, be acted on ^s with Violence; so that the Injury will be nearly the same in either Case; at least, when practised upon those Nerves that occur in the usual Amputations. Again, if they produced Convulsions, the Effect would most probably appear immediately under the Operation, or a few Hours after, and not some Days after, as is now pretended;

^s Wiseman, Vol II. page 229.

when the Convulsions are plainly the Consequence of the dying state of the Patient, and not the Cause of it, having no Characteristic to denote them from the Convulsions attendant upon a common Fever, or any other Sickness in the last Hours of Life. But to finish in one Word; the Success of an Operation is found, by Experience, not to depend in any degree on the greater or less number of Ligatures; which would be notoriously the Case, if the frequent repetition of them was productive of Convulsions: On the contrary, the Symptoms are nearly common to both Instances, where we employ many or few.

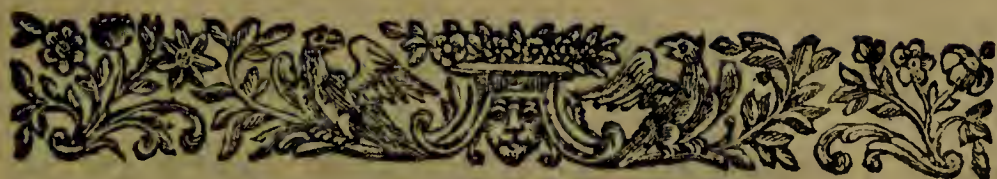
IT is not difficult, however, to account for the Popularity of this Doctrine, from the Idea we have of the Mechanism of the Nerves; but Experience here is a Lesson to us how little we ought to confide in speculative Opinions: The Moment *Parey's* new Method was published, the Objection was started, not from Observations in Practice, but as they thought, the palpable Reason of the thing: And yet so little do we understand the Nature of this Subject, that, to the Confusion of Theory, it has been discovered by
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the Operation for the Aneurism in the Bend of the Arm, that the great Nerve contiguous to the Artery may be tied, not only without fatal Convulsions, but even any notable Inconvenience. It is an Accident hardly ever avoided, though indeed it is cautioned against by Surgical Writers : But whoever is desirous of knowing what Effects it produces, may read the Account of them in the *Bonon. Instit. Vol. II. Part. II. Page 65.* where we have the Histories of the Dissections of these Parts in Patients on whom *Valsalva* had performed the Operation some Years before their Deaths : And the Author of these Histories is so little intimidated by the danger of tying the Nerve, as to advise Surgeons not to embarrass themselves on this Article, but to finish the Operation with all suitable Expedition, and without any regard to a Precaution of so little Importance.

I HOPE I shall not be censured for labouring to establish a Point which no Man of Eminence in *London* contradicts. It is a sufficient Apology for me, that the Writings of the ingenious Surgeons I allude to, being in the Hands of our *English* Students, may possibly mislead them, if not warned against
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the Danger. Besides, Improvements of all kinds are so slowly propagated, that this, amongst others, is not universally practised in the distant Counties of our own Kingdom; and therefore a farther Enforcement of its Advantages will not, I believe, appear to be a useless Undertaking.





POSTSCRIPT.

I HAVE not in the foregoing Chapter made any Alteration, with regard to what I had published in the former Editions of this Work, on the Subject of Styptics for stopping a *Hæmorrhage* from large Vessels; but within these few Years, a new Remedy has been offered to the Public for this purpose, which has met with the Approbation of some of the most eminent Surgeons in *Europe*, who have experimented its Efficacy in several Instances: nevertheless, as it hath not yet been sufficiently practised on the Femoral Artery, to warrant the Recommendation of it on large Vessels, in preference to the Ligature, I have forbore to speak of it in the Body of the Book. Should it hereafter be found equally secure with the Ligature, it would certainly be a most useful Discovery, because it removes one of the most painful Processes of an Amputation: On the other Hand, should it be found to fail sometimes

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times in the Femoral Artery, the Success of it will probably be doubtful in Vessels something smaller than the Femoral Artery ; and then, the Use of it will be confined to the lesser order of Arteries. The Remedy I speak of, is the Agaric of Oak, though it is asserted, that the Agaric which grows on the ¹ Beach Tree, is equally powerful. The Author of this Invention has received a Gratuity from the King of *France*, for the Communication of his Discovery to the Academy of Surgery at *Paris* ; and as the Academy has published a Declaration of their Opinion upon this Subject, I shall here give a Translation of the Piece.

A Topical Remedy for stopping a Hæmorrhage of the Arteries without a Ligature, published by the Royal Academy of Surgery.

“ WE the underwritten Masters in Surgery, being appointed by Monsieur *De la Martiniere*, the King’s first Surgeon, to receive the Report of M. *Brossard*, Surgeon at *Châtre* in *Berry*, touching the Remedy which he has used with Success,

¹ *Memoires De l’Academie De Chirurgie*, 538. Vol. II.

“ for

P O S T S C R I P T.

“ for stopping a *Hæmorrhage* without a Liga-
“ ture, in one Amputation of the Leg done
“ by M. *Bougot* Junior, at the Royal Hof-
“ pital of Invalids; two other Amputations
“ done by M. *Faget* Senior, at the *Charité*,
“ and an Aneurysm performed in private
“ Practice by M. *Morand*, and all of them in
“ the Presence of M. *De la Martiniere*.

“ Do certify, that the said M. *Brossard*,
“ has shewn us a Piece of prepared Fungus,
“ that grows upon old Oaks, which he has
“ assured us is his Secret; and that having
“ required of him to shew us the Plant in
“ its natural State, and the Manner in which
“ he prepares it.

“ *First*, He laid before us several Pieces
“ of that kind which is called by the Bo-
“ tanists *Agaricus pedis equini facie*. *Instit.*
“ *R. b. 562. Fungus in Caudicibus nascens*
“ *unguis equini figurâ. G. B. pin. fungi ig-*
“ *niarii. Trag. 943.* so called, because it is
“ used as Match.

“ M. *Brossard* prefers the Agaric which
“ grows upon old Oaks, that have been lop-
“ ped, and he advises it to be gathered either
“ in *August* or *September*, and afterwards to
“ be kept in a dry Place.

Secondly,

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“ *Secondly*, He prepares it for use in
“ the following Manner. He cuts away
“ with a Knife, the outside Coat, which is
“ hard and white, down to a fungous Sub-
“ stance, which is soft, and gives way to
“ the Fingers when pressed, like Shamois
“ Leather. He then separates this Substance
“ from the hard Part with the Knife, and
“ cuts it into Pieces of different Thicknesses,
“ which he beats with a Hammer, till it
“ becomes so soft as to be easily tore. When
“ it is thus prepared, he applies to the Ori-
“ fice of the bleeding Artery, a Piece larger
“ than the Orifice itself, observing to put
“ the inside of the Agaric next to the Wound;
“ upon the first Piece, he lays a second
“ something larger, and over all, the proper
“ Dressings.

“ *M. Brossard* has sometimes used a coarse
“ Powder, made of the Fungous Part of the
“ Agaric, when it is Worm-eaten; but he
“ does not recommend it as equal in Vir-
“ tue to the Substance, and says the Powder
“ is better when the Part is not Worm-
“ eaten.

“ This

P O S T S C R I P T.

“ This is the Declaration made by M.
“ *Brossard*, at *Paris*, *May* the 7th. 1751.

“ Signed *La Martiniere*, *Morand*, *Foubert*,
“ *Brossard*.

“ Upon this Declaration, the King has granted
“ a *Gratuity* and *Pension* to M. *Brossard*.

“ P. S. The Success of this Remedy is
“ every Day more and more confirmed.”

F I N I S.



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